98-
S. HRG. 1024

UNIFORM PATENT PROCEDURES ACT OF 1983

HEARING

BEFORE THE

SUBCOMMITTEE ON
PATENTS, COPYRIGHTS AND TRADEMARKS

OF THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

SECOND SESSION

ON

S. 2171

A BILL TO AMEND TITLE 35 OF THE UNITED STATES CODE FOR THE PURPOSE OF CREATING A UNIFORM POLICY AND PROCEDURE CONCERNING PATENT RIGHTS IN INVENTIONS DEVELOPED WITH FEDERAL ASSISTANCE, AND FOR OTHER PURPOSES

MARCH 27, 1984

Serial No. J-98-106

Printed for the use of the Committee on the Judiciary

U.S. GOVERNMENT PRINTING OFFICE
37-360 O WASHINGTON : 1984

S 521-74

COMMITTEE ON THE JUDICIARY

STROM THURMOND, South Carolina, *Chairman*

CHARLES McC. MATHIAS, JR., Maryland	JOSEPH R. BIDEN, JR., Delaware
PAUL LAXALT, Nevada	EDWARD M. KENNEDY, Massachusetts
ORRIN G. HATCH, Utah	ROBERT C. BYRD, West Virginia
ROBERT DOLE, Kansas	HOWARD M. METZENBAUM, Ohio
ALAN K. SIMPSON, Wyoming	DENNIS DECONCINI, Arizona
JOHN P. EAST, North Carolina	PATRICK J. LEAHY, Vermont
CHARLES E. GRASSLEY, Iowa	MAX BAUCUS, Montana
JEREMIAH DENTON, Alabama	HOWELL HEFLIN, Alabama
ARLEN SPECTER, Pennsylvania	

VINTON DEVANE LIDE, *Chief Counsel and Staff Director*
DEBORAH K. OWEN, *General Counsel*
DEBORAH G. BERNSTEIN, *Chief Clerk*
MARK H. GITENSTEIN, *Minority Chief Counsel*

SUBCOMMITTEE ON PATENTS, COPYRIGHTS AND TRADEMARKS

CHARLES McC. MATHIAS, JR., Maryland, *Chairman*

PAUL LAXALT, Nevada	HOWARD M. METZENBAUM, Ohio
ORRIN G. HATCH, Utah	PATRICK J. LEAHY, Vermont
ROBERT DOLE, Kansas	DENNIS DECONCINI, Arizona

RALPH OMAN, *Chief Counsel*
STEVEN J. METALITZ, *Staff Director*

CONTENTS

STATEMENTS OF COMMITTEE MEMBERS

Page

Dole, Senator Robert 1, 2
Mathias, Senator Charles McC., Jr 32
Metzenbaum, Senator Howard M 33
Leahy, Senator Patrick J 33, 35
Specter, Senator Arlen 37

PROPOSED LEGISLATION

S. 2171, a bill to amend title 35 of the United States Code for the purpose of creating a uniform policy and procedure concerning patent rights in inventions developed with Federal assistance, and for other purposes 5

CHRONOLOGICAL LIST OF WITNESSES

Thornburgh, Hon. Dick, Governor, Commonwealth of Pennsylvania 43
Merrifield, Hon. D. Bruce, Assistant Secretary of Commerce for Productivity, Technology, and Innovation, accompanied by Norman Latker, Director, Federal Technology Management 52
Holtzman, Steven H., director, Thomas Edison Education Research Partnership, department of development, Columbus, OH, and Dr. John S. Toll, president, University of Maryland, Adelphi, MD 75
Hudis, Dr. Jerome, assistant director, Brookhaven National Laboratory, Upton, NY; Dr. Edwin T. Yates, patent management officer, Johns Hopkins University, Baltimore, MD; Dr. Philip V. Livdahl, deputy director, Fermi National Accelerator Laboratory, Batavia, IL; and Frank Lukasik, Chief, Patent Law Division, AFSC/JAT, Andrews Air Force Base, MD 93
Adams, Dr. Robert M., senior vice president, 3M Co., St. Paul, MN; William E. Riley, Jr., past president, Licensing Executives Society, U.S.A. and Canada, and director of marketing, Battelle Corp., Columbus, OH; William D. Carey, executive officer, American Association for the Advancement of Science, Washington, DC; and Louis Mogavero, president, Trantek, Inc., McLean, VA 150

ALPHABETICAL LISTING AND MATERIALS SUBMITTED

Adams, Dr. Robert M.:
- Testimony 150
- Prepared statement 152
- Letter, to Senator Robert Dole, April 24, 1984, with questions and answers 158
- Letter, to Senator Charles McC. Mathias, Jr., May 8, 1984, with response to subcommittee question 160

Carey, William D.:
- Testimony 168
- Prepared statement 169
- Letter, to Senator Charles McC. Mathias, Jr., May 18, 1984 171

Dole, Senator Robert: Sectional analysis: Uniform Patent Procedures Act of 1983 3

Holtzman, Steven H.:
- Testimony 75
- Prepared statement 78

Holtzman, Steven H.—Continued
State of Ohio, Department of Development leaflets: Page
Thomas Alva Edison Partnership Program 82
Innovative Research Financing Program 84
Advanced Technology Application Centers Program 85
Hudis, Dr. Jerome:
Testimony 93
Prepared statement 96
Letters to:
Dr. James F. Decker, Office of Energy Research, U.S. Department of Energy:
February 1, 1983 102
April 4, 1983 114
Arthur A. Churm, Director, Office of Patent Counsel, U.S. Department of Energy, Chicago Operations Office, April 9, 1982 106
Senator McClure, from the White House, July 21, 1982 107
Senator Robert Dole, Patents, Copyrights and Trademarks Subcommittee, May 25, 1984 116
Scientific Staff Manual, Office of Scientific Personnel, October 1983 109
Summary sheet prepared by Battelle's Pacific Northwest Laboratory outlining the responses submitted to DOE from all the DOE national laboratories in preparation for the February 1983 meeting 119
Latker, Norman: Testimony 52
Leahy, Senator Patrick J.: Letter, from Robert B. Lawson, professor, University of Vermont, to John Podesta, counsel to Senator Leahy, March 22, 1984 ... 36
Livdahl, Philip V.:
Testimony 125
Prepared statement 127
Responses to written questions of Senator Dole 129
Lukasik, Frank A.:
Testimony 130
Prepared statement 132
Illustration: New Technology 139
An amendment to S. 2171 to establish "The Federal Laboratory Cooperative R&D Program" 140
Responses to written questions of Senator Dole 142
Section 4 of the Advisory Committee on Industrial Innovation 144
Merrifield, Hon. Bruce D.:
Testimony 52
Prepared statement 59
Responses to written questions of Senator Dole 65
Responses to written questions of Senator Mathias 67
Responses to written questions of Senator Metzenbaum 71
Letter, from Irving P. Margulies, General Counsel, Department of Commerce, to Senator Robert Dole, June 13, 1984 74
Metzenbaum, Senator Howard M.:
Letter, from H.G. Rickover, March 26, 1984 37
Prepared statement of Admiral H.G. Rickover 39
Mogavero, Louis:
Testimony 172
Prepared statement 174
Responses to written questions of Senator Dole 176
Riley, William E., Jr.:
Testimony 162
Prepared statement 163
Responses to written questions of Senator Dole 165
Thornburgh, Hon. Dick:
Testimony 43
Prepared statement 49
Toll, Dr. John S.:
Testimony 86
Prepared statement 89
Responses to written questions of Senator Dole 91
Yates, Edwin T.:
Testimony 120
Prepared statement 122

APPENDIX

CORRESPONDENCE

Letters from: Page
Warren D. Niederhauser, president, American Chemical Society, to Senator Charles McC. Mathias, Jr., April 20, 1984 179
James Summerton, general partner, Anti-Gene Development Group, to Senator Dole:
May 8, 1984 181
March 7, 1984 182
Joseph P. Allen, Department of Commerce, to James Summerton, April 27, 1984 184
William R. Miller, Bristol-Myers Co., to Senator Charles McC. Mathias, Jr., April 16, 1984 185

ADDITIONAL STATEMENTS

Statement of the National Institute for Entrepreneurial Technology 189
Statement on behalf of the Patent, Trademark and Copyright Law Section, Bar Association of the District of Columbia 191

UNIFORM PATENT PROCEDURES ACT OF 1983

TUESDAY, MARCH 27, 1984

U.S. SENATE,
COMMITTEE ON THE JUDICIARY,
SUBCOMMITTEE ON PATENTS, COPYRIGHTS AND TRADEMARKS,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:15 a.m., in room SD-228, Dirksen Senate Office Building, Senator Robert Dole (member of the subcommittee) presiding.

Also present: Senators Metzenbaum, Leahy, and Specter.

Staff present: Steven J. Metalitz, chief counsel to Senator Mathias; Douglas B. Comer, chief counsel to Senator Dole; Sheila C. Bair, counsel to Senator Dole; and Patricia A. Brown, chief clerk, Subcommittee on Courts.

OPENING STATEMENT OF SENATOR ROBERT DOLE

Senator DOLE. The Subcommittee on Patents, Copyrights and Trademarks convenes today to receive testimony on S. 2171, the Uniform Patent Procedures Act. This legislation, introduced by myself, Senator Laxalt, and Senator DeConcini, is designed to encourage the private sector development of new technologies under Federal research and development contracts by reforming and standardizing Federal agency procurement policies.

In response to the widely acknowledged need to stimulate productivity, we have heard a considerable amount of vague rhetoric about the need for an industrial policy. Much of this talk is focused on more Government bureaucracy, such as the creation of an Industrial Planning Board, or on spending more of the taxpayers' money in the form of Government assistance to so-called winning industries.

Yet there are concrete specific steps which can be taken now which do not involve increased expenditures or more governmental interference in the marketplace, and which we know will begin immediately to strengthen America's competitive position.

For instance, the Judiciary Committee is expected soon to report legislation to remove antitrust disincentives to joint research and development ventures. Another measure pending on the committee's calendar would give long-needed copyright protection to the manufacturers of microcomputer chips. Moreover, Senate floor action is expected in the near future on comprehensive regulatory reform legislation which, among other things, would require agencies to conduct a cost-benefit analysis before imposing additional regulatory burdens on the private sector.

S. 2171 is another specific proposal which, if enacted, would make a meaningful contribution to enhancing productivity and strengthening this Nation's competitive position. It would accomplish this by bringing the patent procurement policies of all Federal agencies that sponsor research and development into conformity with the principles of Public Law 96-517, the Bayh/Dole University and Small Business Patent Procedures Act of 1980.

I would ask that the balance of my statement be made a part of the record.

[The prepared statement of Senator Dole and a sectional analysis of S. 2171 follows:]

PREPARED STATEMENT OF SENATOR ROBERT DOLE

The Subcommittee on Patents, Copyrights and Trademarks convenes today to receive testimony on S. 2171, the Uniform Patent Procedures Act. This legislation, introduced by myself, Senator Laxalt, and Senator DeConcini, is designed to encourage the private sector development of new technologies under Federal research and development contracts, by reforming and standardizing Federal agency procurement policies.

It is impossible to overemphasize the importance of increased domestic industrial productivity to our Nation's economic growth and prosperity. The development and marketing of new technologies provides our economy with better products and services at a lower cost and, as such, represents the only long-term solution to inflation. And, of course, this process creates new jobs. The rapidly evolving U.S. computer industry, for example, now provides jobs for about 830,000 people. Finally, increased productivity gives American business an advantage in competing in the world market, where U.S. leadership in technological innovation has been in danger of eroding.

In response to the widely acknowledged need to stimulate productivity, we have heard a considerable amount of vague rhetoric about the need for an "industrial policy." Much of this talk has focused on more government bureaucracy—such as the creation of an "industrial planning board"—or on spending more of the taxpayer's money in the form of government assistance to so-called "winning industries." Yet there are concrete, specific steps which can be taken now—which do not involve increased expenditures or more governmental interference in the market place—and which we know will begin immediately to strengthen America's competitive position. For instance, the Judiciary Committee is expected to soon report legislation to remove antitrust disincentives to joint research and development ventures. Another measure pending on the committee's calendar would give long-needed copyright protection to the manufacturers of micro-computer chips. Moreover, Senate floor action is expected in the near future on comprehensive regulatory reform legislation which, among other things, would require agencies to conduct a cost-benefit analysis before imposing additional regulatory burdens on the private sector.

S. 2171 represents yet another of these specific, concrete proposals which, if enacted, should make a meaningful contribution to enhancing productivity and strengthening this Nation's competitive position. The bill would accomplish this by bringing the patent procurement policies of all Federal agencies that sponsor research and development into conformity with the principles of Public Law 96-517, the Bayh/Dole University and Small Business Patent Procedures Act of 1980.

Public Law 96-517 provided for university and small business ownership of inventions arising from federally assisted research, thus ending years of bureaucratic redtape which had clouded the ownership to such inventions and frustrated their commercial application. As a result of Public Law 96-517, government-university-industry cooperation has increased substantially, and whole new industries—such as biotechnology enterprises have been born.

By creating a presumption in favor of contractor ownership of inventions arising from federally assisted research programs regardless of the size of the contractor, S. 2171 will likewise encourage large business, many of which have specialized skills and background in technological areas of interest to the government, to increase their participation in federally assisted research projects and to market the new discoveries resulting from such endeavors. In addition, S. 2171 would eliminate the current hodge-podge of agency patent procurement regulatory requirements by vesting with the Secretary of Commerce the sole authority to issue implementing regulations. Further, the bill would repeal all current statutes which contradict the new,

uniform standards, and would make certain improvements to Public Law 96-517, such as lifting restrictions on university licensing.

The bill has been carefully drafted to ensure that all patents on inventions resulting from the expenditure of Federal funds are used in a manner consistent with the public interest. For instance, contractor ownership of inventions is not permitted where the invention is needed by the Government for national security reasons, where the contractor is not located in the United States, or where other exceptional circumstances require Federal ownership. In addition, agencies may force contractors to grant licenses to competitors if effective steps are not being taken toward commercialization.

I understand from the Department of Commerce that the Japanese have apparently expressed reservations about S. 2171, because, they say, it might curtail free access to our publicly funded discoveries. In this regard, however, I believe it should also be noted that under present law, agencies can, and have, retained ownership of inventions and then destroyed their domestic value by offering licenses to anyone who comes along. This practice, along with the wealth of technical information which is commonly made freely available by agencies, constitutes a valued resource to our foreign competitors which they would lose should S. 2171 be enacted into law.

S. 2171 is the end result of a 25-year effort to develop a uniform concise Government patent policy. It would replace the present bureaucratic maze with a single policy which emphasizes the private development and marketing of new inventions wherever feasible. In short, it would let the private enterprise system do what it does best—produce new products and jobs that the public wants and needs.

Uniform Patent Procedures Act of 1983

SECTIONAL ANALYSIS

Sec. 1: Title.

Sec. 2: Conforms P.L. 96-517 chapter designations to U.S.C.A. codification.

Sec. 3a: Adds a new chapter to Title 35, U.S.C., the provisions of which would do the following:

Sec. 212: States the policy objective of the Act, to "insure that all inventions made with federal support are used in a manner to promote free competition and enterprise."

Sec. 213: Definitions used in the Act.

Sec. 214: Authorizes the Secretary of Commerce to issue implementing regulations for the Act.

Sec. 215: Provides that federal contractors may automatically own inventions they make under Government R&D unless:

(1) it is determined that the discovery is needed for foreign intelligence or counterintelligence purposes;

(2) the contractor is not located in the U.S., or is a foreign government; or

(3) it is determined on a case-by-case basis that exceptional circumstances require federal ownership.

Such determinations will be made in writing and filed with the Secretary of Commerce to prevent abuse of these exceptions to contractor ownership. In cases of abuse, the Secretary shall notify the Administrator of the Office of Federal Procurement Policy who may issue guidelines ending such practices.

This section also provides that, in instances where the contractor does not elect to file a patent application in the United States or abroad, the agency may then assert ownership if it desires to do so.

In addition, Section 215 also stipulates that the agency may use a subject invention royalty free and can require that it be kept updated on utilization of the invention by the contractor.

Sec. 216: Provides that agencies may force contractors to grant licenses to competitors for using an invention made under federal R&D if effective steps are not being taken toward commercialization; to alleviate serious health or safety needs not being satisfied by the contractor; or to meet requirements for public use specified by federal regulations not being satisfied by the contractor. Agency determinations on mandatory licenses may be appealed by the contractor within 60 days to the United States Claims Court.

Sec. 217: Protects contractors from the threat that agencies might require them to give up privately developed technologies to competitors in order to secure a contract, unless specifically approved by the agency head. Such determinations can be made only after an agency hearing with prompt notification to the contractor.

Sec. 2b: Chapter headings redesignated.

Sec. 2c: Repeals certain limitations placed upon university licensing by present law, in order to encourage more collaboration between industry and universities.

Sec. 3: Repeals old patent policies so that this Act may implemented uniformly.

Sec. 4: Specifies that nothing in this Act shall be construed to grant any civil or criminal immunity from any antitrust law of the United States.

Sec. 5: Provides that the Act becomes effective six months after enactment, and authorizes agencies to apply its provisions to pre-existing contracts where deemed appropriate.

Sec. 6: Provides that the Secretary of Commerce shall report to the Congress within 24 months, and every two years thereafter, on the implementation of this Act along with any recommendations for legislative or administrative changes.

[A copy of S. 2171 and a prepared statement of Senator Mathias, chairman of the subcommittee, follows:]

II

98TH CONGRESS
1ST SESSION

S. 2171

To amend title 35 of the United States Code for the purpose of creating a uniform policy and procedure concerning patent rights in inventions developed with Federal assistance, and for other purposes.

IN THE SENATE OF THE UNITED STATES

NOVEMBER 18 (legislative day, NOVEMBER 14), 1983

Mr. DOLE (for himself, Mr. LAXALT, and Mr. DECONCINI) introduced the following bill; which was read twice and referred to the Committee on the Judiciary

---

A BILL

To amend title 35 of the United States Code for the purpose of creating a uniform policy and procedure concerning patent rights in inventions developed with Federal assistance, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Uniform Patent Procedures Act of 1983".

SEC. 2. (a) Chapter 38 of title 35, United States Code, as added by Public Law 96–517 (94 Stat. 3018), is redesignated as chapter 18 of such title and all references to such chapter 38 shall be considered references to chapter 18.

(b) Part II of title 35, United States Code, is amended by inserting chapter 18, as redesignated herein, after chapter 17 of such title.

(c) The table of chapters for title 35 is amended by redesignating chapter 38 as chapter 18 and inserting such chapter and section designations at the end of part II.

SEC. 3. (a) Section 35 of the United States Code is amended by adding after chapter 18, as redesignated herein, a new chapter as follows:

"CHAPTER 19—PATENT RIGHTS IN INVENTIONS MADE WITH FEDERAL ASSISTANCE BY OTHER THAN SMALL BUSINESS FIRMS OR NONPROFIT ORGANIZATIONS

"Sec.
"212. Policy and objectives.
"213. Definitions.
"214. Responsibilities.
"215. Disposition of rights.
"216. March-in rights.
"217. Background rights.

"§ 212. Policy and objectives

"In addition to the policy and objectives set forth in section 200 of this title, it is the further policy and objective of the Congress to ensure that all inventions made with Federal support are used in a manner to promote free competition and enterprise.

"§ 213. Definitions

"As used in this chapter, the term—

"(1) 'Administrator' means the Administrator of the Office of Federal Procurement Policy or his or her designee;

"(2) 'contract' means any contract, grant, or cooperative agreement entered into between any Federal agency (other than the Tennessee Valley Authority) and any person other than a small business firm or nonprofit organization (as defined in section 201 of this title) where a purpose of the contract is the conduct of experimental, developmental, or research work; such term includes any assignment, substitution of parties or subcontract of any tier entered into or executed for the conduct of experimental, developmental, or research work in connection with the performance of that contract;

"(3) 'contractor' means any person or entity (other than a Federal agency, nonprofit organization, or small business firm, as defined in section 201 of this title) which is a party to the contract;

"(4) 'Federal agency' means an executive agency (as defined in section 105 of title 5, United States Code), and the military departments (as defined in section 102 of title 5, United States Code);

"(5) 'Government' means the Government of the United States of America;

"(6) 'invention' means any invention or discovery which is or may be patentable or otherwise protectable under this title, or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.);

"(7) 'practical application' means to manufacture (in the case of a composition or product), to practice (in the case of a processor method), or to operate (in the case of a machine or system), in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms or through reasonable licensing arrangements;

"(8) 'Secretary' means the Secretary of Commerce or his or her designee; and

"(9) 'subject invention' means any invention of a contractor conceived or first actually reduced to practice in the performance of work under a contract: *Provided*, That, in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act (7 U.S.C. 2401(d)) must also occur during the period of contract performance.

"§ 214. Responsibilities

"(a) The Secretary is authorized to issue regulations which may be made applicable to all Federal agencies implementing the provisions of this chapter, and the Secretary shall proscribe standard patent rights provisions for use under this chapter. The regulations and the standard patent rights provisions shall be subject to public comment before their issuance.

"(b) In order to obtain consistent practices under this chapter and chapter 18 of this title, the Secretary is authorized and directed (i) to consult with and advise Federal agencies concerning the effective and consistent implementation of these chapters, and (ii) to obtain from the agencies information and data relating to agency practices under these chapters.

"§ 215. Disposition of rights

"(a) Subject to subsection (c) of this section and to section 216 of this title, each contractor may elect to retain title, either worldwide or in such countries as it may choose, to any subject invention: *Provided, however,* That a Federal agency may, at the time of contracting, limit or eliminate this right, place additional restrictions or conditions on the contract that go beyond those set forth in subsection (c) of this section, expand the rights of the Government to license or sublicense, and alter or eliminate the contractor's right under paragraph (6) of subsection (c) of this section if—

"(1) it is determined by a Government authority which is authorized by statute or Executive order to conduct foreign intelligence or counterintelligence activities that this is necessary to protect the security of such activities;

"(2) it is determined that the contractor is not located in the United States or does not have a place of business located in the United States, or is a foreign government; or

"(3) it is determined, on a case-by-case basis, that there are exceptional circumstances requiring such action to better promote the policies and objectives of sections 200 and 212 of this title.

"(b)(1) Each determination required by subsection (a) of this section shall be in writing and, except in the case of paragraph (1) of subsection (a) of this section, the agency shall, within thirty days after the award of the applicable contract, file with the Secretary a copy of each such determination. In the case of a determination under subsection (a)(3) of this section, the statement shall include an analysis supporting the determination and justifying the limitations and conditions being imposed. If the Secretary believes that any individual determination or pattern of determinations is contrary to the terms, policy, or objectives of this Act, the Sec-

retary shall so advise the head of the agency concerned and the Administrator and recommend corrective actions.

"(2) Whenever the Administrator has determined that one or more Federal agencies are utilizing the authority of paragraph (2) or (3) of subsection (a) in a manner that is contrary to the terms, policy, or objectives of this Act, the Administrator is authorized to issue policies, procedures, and guidelines describing classes of situations in which agencies may not utilize the provisions of paragraph (2) or (3) of subsection (a).

"(c) In accordance with the regulations to be issued by the Secretary, after public comment, each contract that the Government or any Federal agency acting on behalf of the Government may enter into shall employ a patent rights clause containing appropriate provisions to effectuate the following:

"(1) that the contractor disclose each subject invention within a reasonable time after it is made and that, upon request, the contractor will assign the Government title to any subject invention not disclosed within such time;

"(2) that, unless the Government has acquired the right to title under subsection (a) of this section—

"(A) the contractor make a written election, as to the retention of title to the subject invention

within a reasonable time after disclosure under paragraph (1) of this subsection;

"(B) the Government may, upon request, receive title to any subject invention in any countries in which the contractor has not elected to retain title within such time;

"(C) a contractor electing to retain title to a subject invention will file patent applications within reasonable times; and

"(D) the Government may, upon request, receive title to any subject invention in any countries in which the contractor has failed to file patent applications within the reasonable times specified pursuant to subparagraph (C) of this subsection;

"(3) that with respect to any subject invention to which a contractor elects to retain title, the United States shall have (unless additional rights have been taken under subsection (a) of this section) a nonexclusive, nontransferrable, irrevocable, paid-up license to make, use and sell the subject invention throughout the world by or on behalf of the United States: *Provided*, That the contract may provide for such additional rights, including the right to assign or have assigned foreign patent rights in the invention, as determined by

the agency as necessary for meeting the obligations of the United States under any treaty or other international agreement, arrangement of cooperation, memorandum of understanding, or similar international arrangement, including military agreements relating to weapons development and production;

"(4) that the agency may require written reports on the commercial use or other forms of utilization or efforts toward obtaining commercial utilization made by the contractor or its licensees or assignees with respect to any subject invention to which the contractor elects title, pursuant to this section: *Provided*, That any such report, as well as any information on utilization of efforts toward obtaining utilization obtained as part of a proceeding under section 216 of this title, shall be treated by the Federal agency as commercial or financial information obtained from a person and privileged or confidential and not subject to disclosure under the Freedom of Information Act (5 U.S.C. 552);

"(5) that the contractor, in the event a United States patent application is filed by or on its behalf or by any assignee of the contractor, will include within the specification of such application and any patent issuing thereon, a statement specifying that the inven-

tion was made with Government support and that the Government has certain rights in the invention;

"(6) that the contractor, in cases when it does not elect to retain title to a subject invention, shall retain a nonexclusive, royalty free, paid-up, worldwide license, including the right to sublicense affiliates, subsidiaries, and existing licensees to whom the contractor is legally obligated to sublicense in any subject invention to which the Government obtains title, which license shall be revocable only to the extent necessary for the Government to grant an exclusive license: *Provided, however*, That the contractor shall not be entitled to such a license if the contractor has fraudulently failed to disclose the subject invention; and

"(7) such other administrative requirements that the Secretary determines to be necessary to effectuate the rights of the Government as specified in this chapter, which are not inconsistent with this chapter.

"(d) Agencies are authorized to include awards to inventors to stimulate reporting of subject inventions as an allowable element of cost if such reporting results in the agency initiating a statutory invention disclosure, the filing of a patent application, or issuance of a patent.

"(e)(1) A Federal agency may, at any time, waive all or any part of the rights of the United States under this section

or section 216 of this title to any subject invention or class of subject inventions made or which may be made under a contract or class of contracts if the agency determines that—

"(A) the interests of the United States and the general public will be best served thereby; or

"(B) the contract involves cosponsored, cost-sharing or joint venture research or development and the contractor or other sponsor or joint venturer is required to make a substantial contribution of funds, facilities, or equipment to the work performed under the contract.

"(2) The agency shall maintain a record, which shall be available to the public and periodically updated, of determinations made under paragraph (1) of this subsection.

"(3) In making determinations under paragraph (1) of this subsection, the agency shall consider at least the following objectives:

"(A) encouraging wide availability to the public of the benefits of the experimental, developmental, or research programs in the shortest practicable time;

"(B) promoting the commercial utilization of such inventions;

"(C) encouraging participation by private persons (including the most highly qualified persons) in the

Government-sponsored experimental, developmental, or research programs; and

"(D) fostering competition and preventing the creation or maintenance of situations inconsistent with the antitrust laws of the United States.

"(4) With respect to contracts in which an agency invokes paragraphs (1) through (3) of subsection (a) of section 215, a Federal agency may, after a subject invention has been identified, waive any limits or additional restrictions or conditions placed on a contractor beyond those set forth in sections 215 and 216 and may allow the contractor to retain the license rights set forth in subsection (c)(6) of this section if such license rights were otherwise limited in the contract.

"(f) If a contractor does not elect to retain worldwide title to a subject invention, the Federal agency may consider and, after consultation with the contractor, grant requests for retention of rights by the inventor on such terms and conditions as the agency deems appropriate, subject to section 216 of this Act.

"(g) In any case when a Federal employee is a coinventor of any subject invention, the Federal agency employing such coinventor is authorized to transfer or assign whatever rights it may acquire in the subject invention from its employee to the contractor subject to the same conditions set forth

in this title as are applicable to the rights the contractor derived through its own contract.

"§ 216. March-in rights

"(a) Where a contractor has elected to retain title to a subject invention under section 215 of this title, the Federal agency shall have the right (unless waived under subsection (d) of section 215 of this title), pursuant to policies, procedures, and guidelines of the Secretary and subject to the provisions of subsection (b) of this section, to grant or require the contractor or his assignee to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicant or applicants, upon terms reasonable under the circumstances, if the head of the agency or his designee determines that such action is necessary—

"(1) because the contractor, assignee, or licensee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the invention;

"(2) to alleviate serious health or safety needs which are not reasonably satisfied by the contractor, his assignees or licensees; or

"(3) to meet requirements for public use specified by Federal regulation which are not reasonably satisfied by the contractors, his assignees or licensees.

"(b) A determination made pursuant to this section shall not be considered a contract dispute and shall not be subject to the Contract Disputes Act (41 U.S.C 601 et seq.). Any contractor adversely affected by a determination under this section may, at any time within sixty days after the date the determination is issued, file a petition in the United States Claims Court, which shall have jurisdiction to determine the matter de novo and to affirm, reverse, or modify as appropriate, the determination of the Federal agency.

"§ 217. Background rights

"(a) Nothing contained in this chapter shall be construed to deprive the owner of any background patent or of such rights as the owner may have under such patent.

"(b) No contract shall contain a provision allowing a Federal agency to require the licensing to third parties of inventions owned by the contractor that are not subject inventions unless such provision has been approved by the agency head and a written justification has been signed by such agency head. Any such provision will clearly state whether the licensing may be required in connection with the practice of a subject invention, a specifically identified work object, or both. The agency head may not delegate the authority to approve such provisions or to sign the justification required for such provisions.

"(c) A Federal agency will not require the licensing of third parties under any such provision unless the agency head determines that the use of the invention by others is necessary for the practice of a subject invention or for the use of a work object of the contract and that such action is necessary to achieve practical application of the subject invention or work object. Any such determination will be made on the record after an opportunity for an agency hearing, and the contractor shall be given prompt notification of the determination by certified or registered mail.".

(b) The table of chapters for title 35, United States Code, is amended by adding immediately after the item relating to chapter 18 as redesignated herein the following:

"19. Patent rights in inventions made with Federal assistance by other than small business firms or nonprofit organizations.".

(c) Chapter 18 of title 35, United States Code, as redesignated herein, is amended—

(1) by adding "or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.)" immediately after "title" in section 201(d);

(2) by adding ": *Provided*, That in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act (7 U.S.C. 2401(d))) must also occur during the period of

contract performance" immediately after "agreement" in section 201(e);

(3) in section 202(a), by amending clause (i) to read as follows: "(i) when the contractor is not located in the United States or does not have a place of business located in the United States; and

(4) by amending section 202(b) to read as follows: "(b)(1) The rights of the Government under paragraph (a) of this section shall not be exercised by a Federal agency unless it first determines that at least one of the conditions identified in subparagraphs (i) through (iii) of paragraph (a) exists. Except in the case of paragraph (a)(iii), the agency shall file with the Secretary of Commerce, within thirty days after the award of the applicable funding agreement, a copy of such determination. In the case of a determination under paragraph (a)(ii), the statement shall include an analysis justifying the determination. If the Secretary of Commerce believes that any individual determination or pattern of determinations is contrary to the policies and objectives of this chapter or otherwise not in conformance with this chapter, the Secretary shall so advise the head of the agency concerned and the Administrator of the Office of Federal Procurement Policy, and recommend corrective actions.

"(2) Whenever the Administrator of the Office of Federal Procurement Policy has determined that one or more Fed-

eral agencies are utilizing the authority of subparagraph (i) or (ii) of paragraph (a) of this section in a manner that is contrary to the policies and objectives of this chapter, the Administrator is authorized to issue regulations describing classes of situations in which agencies may not exercise the authorities of those subparagraphs.";

(5) by amending subparagraphs (1), (2), (3), and (4) of section 202(c) to read as follows:

"(1) That the contractor disclose each subject invention to the Federal agency within a reasonable time after it becomes known to contractor personnel responsible for the administration of patent matters, and that the Federal Government may receive title to any subject invention not disclosed to it within such time.

"(2) That the contractor make a written election within two years after disclosure to the Federal agency (or such additional time as may be approved by the Federal agency) whether the contractor will retain title to a subject invention: *Provided*, That in any case where publication, on sale, or public use, has initiated the one year statutory period in which valid patent protection can still be obtained in the United States, the period for election may be shortened by the Federal agency to a date that is not more than sixty days prior to the end of the statutory period: *And provided*

further, That the Federal Government may receive title to any subject invention in which the contractor does not elect to retain rights or fails to elect rights within such times.

"(3) That a contractor electing rights in a subject invention agrees to file a patent application prior to any statutory bar date that may occur under this title due to publication, on sale, or public use, and shall thereafter file corresponding patent applications in other countries in which it wishes to retain title within reasonable times, and that the Federal Government may receive title to any subject inventions in the United States or other countries in which the contractor has not filed patent applications on the subject invention within such times.

"(4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferrable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world: *Provided*, That the funding agreement may provide for such additional rights, including the right to assign or have assigned foreign patent rights in the subject invention, as are determined by the agency as necessary for meeting the obligations of the United

States under any treaty, international agreement, arrangement of cooperation, memorandum of understanding, or similar arrangement, including military agreements relating to weapons development and production.".

(6) by adding the following new paragraph at the end of section 202:

"(g) A Federal agency may at any time waive all or any part of the rights of the United States under paragraphs (c) (4) through (8) of this section, section 203, and section 204 of this chapter, to any subject inventions made under a funding agreement or class of funding agreements if the agency determines (1) that the interests of the United States and the general public will be best served thereby; or (2) the funding agreement involves cosponsored, cost sharing or joint venture research or venturer is required to make or has made a substantial contribution of funds, facilities, or equipment to the work performed under the funding agreement. The agency shall maintain a record, which shall be available to the public and periodically updated, of determinations made under this paragraph. In making such determinations under clause (A) of this paragraph, the agency shall consider at least the following objectives:

"(1) encouraging the wide availability to the public of the benefits of the experimental, developmen-

tal, or research program in the shortest practicable time;

"(2) promoting the commercial utilization of such inventions;

"(3) encouraging participation by private persons, including the most highly qualified persons, in Government-sponsored experimental, developmental, or research programs."; and

(7) by striking out "may" in section 202(c)(5) and inserting in lieu thereof "as well as any information on utilization or efforts at obtaining utilization obtained as part of a proceeding under section 203 of this chapter shall";

(8) by striking out "and which is not, itself, engaged in or does not hold a substantial interest in other organizations engaged in the manufacture or sales of products or the use of processes that might utilize the invention or be in competition with embodiments of the invention" in clause (A) of section 202(c)(7) and by striking out clause (B) of section 202(c)(7) and redesignating clauses (C) and (D) of such section as clauses "(B)" and "(C)", respectively;

(9) by adding at the end of section 203 the following:

"A determination pursuant to this section shall not be considered a contract dispute and shall not be subject to the Contract Disputes Act (41 U.S.C. 601 et seq.). Any contractor, assignee, or exclusive licensee adversely affected by a determination under this section may, at any time within sixty days after the determination is issued, file a petition in the United States Claims Court, which shall have jurisdiction to determine the manner de novo and to affirm, reverse, or modify as appropriate, the determination of the Federal agency.";

(10) by amending section 206 to read as follows:

"§ 206. Uniform clauses and regulations

"The Secretary of Commerce may issue regulations which may be made applicable to Federal agencies implementing the provisions of sections 202 through 204 of this chapter and shall establish standard funding agreement provisions required under this chapter. The regulations and the standard funding agreement shall be subject to public comment before their issuance.";

(11) by amending section 207 by adding the following new paragraph at the end thereof:

"For the purpose of assuring the effective management of Government-owned inventions, the Secretary is authorized to—

"(A) assist Federal agency efforts to promote the licensing and utilization of Government-owned inventions;

"(B) assist Federal agencies in seeking protection and maintaining inventions in foreign countries, including the payment of fees and costs connected therewith; and

"(C) consult with and advise Federal agencies as to areas of science and technology research and development with potential for commercial utilization.";

(12) by amending section 208 by striking out "Administrator of General Services" and inserting in lieu thereof "Secretary of Commerce";

(13) by amending section 209—

(A) by striking out subsection (c)(2);

(B) by redesignating subsection (c)(3) as subsection (c)(2); and

(C) by striking out all in paragraph (d) after "objections" and inserting in lieu thereof a period; and

(14) by adding "of the United States" in section 211 after "law" .

SEC. 3. (a) Section 205(a) of the Act of August 14, 1946 (7 U.S.C. 1624(a)), is amended by striking out the last sentence thereof.

(b) Section 501(c) of the Federal Coal Mine Health and Safety Act of 1969 (30 U.S.C. 951(c)) is amended by striking out the last sentence thereof.

(c) Section 106(c) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1395(c)) is repealed.

(d) Section 12(a) of the National Science Foundation Act of 1950 (42 U.S.C. 1871(a)) is repealed.

(e)(1) Section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) is repealed: *Provided, however,* That such section shall continue to be effective with respect to any application for a patent in which the statement under oath referred to in such section has been filed or requested to be filed by the Commissioner of Patents and Trademarks prior to the effective date of this Act.

(2) The item relating to section 152 in the table of contents of the Atomic Energy Act of 1954 is amended to read as follows:

"Sec. 152. Repealed".

(f) The National Aeronautics and Space Act of 1958 (42 U.S.C. 2451 et seq.) is amended by—

(1) repealing subsections (a)–(h) and (j) of section 305 thereof (42 U.S.C. 2457): *Provided, however,* That subsections (c), (d), and (e) of such section shall continue to be effective with respect to any application for patents in which the written statement referred to in subsection (c) of such section has been filed or request-

ed to be filed by the Commissioner of Patents and Trademarks prior to the effective date of this Act;

(2) striking out in section 306(a) thereof (42 U.S.C. 2458(a)), "(as defined by section 305)", and by striking "the Inventions and Contributions Board, established under section 305 of this Act" and inserting in lieu thereof "an Inventions and Contributions Board which shall be established by the Administrator within the Administration"; and

(3) striking out in section 203(c) thereof (42 U.S.C. 2473(c)), the following: "(including patents and rights thereunder)".

(g) Section 6 of the Act of July 7, 1960 (30 U.S.C. 666), is repealed.

(h) Section 4 of the Helium Act Amendments of 1960 (50 U.S.C. 167b) is amended by striking out all after "utilization" and inserting in lieu thereof a period.

(i) Section 32 of the Arms Control and Disarmament Act (22 U.S.C. 2572) is repealed.

(j) Subsection (e) of section 302 of the Appalachian Regional Development Act of 1965 (40 U.S.C. App. 302(e)) is repealed.

(k) Subsections (a) through (k), (m), and (n) of section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5908) are repealed.

(l) Section 5(d) of the Consumer Product Safety Act (15 U.S.C. 2054(d)) is repealed.

(m) Section 3 of the Act of April 5, 1944 (30 U.S.C. 323), is repealed.

(n) Section 8001(c)(3) of the Solid Waste Disposal Act (42 U.S.C. 6981(c)(3)) is repealed.

(o) Section 6(e) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3705(e)) is repealed.

(p) Section 10(a) of the Act of June 29, 1935 (7 U.S.C. 427i(a)) is amended by striking the last sentence thereof.

(q) Section 427(b) of the Federal Mine Safety and Health Act of 1977 (30 U.S.C. 937(b)) is amended by striking the last sentence thereof.

(r) Section 306(d) of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1226(d)) is amended by striking the first two sentences thereof.

(s) Section 21(d) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2218(d)) is repealed.

(t) Section 6(b) of the Solar Photovoltaic Energy Research, Development, and Demonstration Act of 1978 (42 U.S.C. 5585(b)) is amended by striking "7, 8, and 9" and inserting in lieu thereof "7 and 8".

(u) Section 12 of the Native Latex Commercialization and Economic Development Act of 1978 (7 U.S.C. 178j) is repealed.

(v) Section 408 of the Water Research and Development Act of 1978 (42 U.S.C. 7879) is repealed.

(w)(1) Section 173 of the United States Synthetic Fuels Corporation Act of 1980 (42 U.S.C. 8773) is repealed.

(2) The item relating to section 173 in the table of sections of the Energy Security Act (42 U.S.C. 8701 et seq.) is amended to read as follows:

"Sec. 173. Repealed.".

SEC. 4. Nothing in this Act shall be deemed to convey to any person immunity from civil or criminal liability, or to create any defense to actions, under any antitrust law of the United States.

SEC. 5. (a) This Act shall take effect six months after the date of enactment of this Act.

(b) After the effective date of this Act, each Federal agency is authorized, notwithstanding any other law governing the disposition of rights in subject inventions, to allow a contractor or an inventor to retain title to subject inventions made under contracts awarded prior to the effective date of this Act, subject to the same terms and conditions as would apply under this Act had the contract been entered into after the effective date of this Act.

SEC. 6. Within twenty-four months after the date of enactment of this Act and every two years thereafter, the Secretary of Commerce shall submit to Congress a report of the implementation of chapters 18 and 19 of title 35, United

States Code, including any recommendations for legislative or administrative changes to better achieve the policies and objectives of such chapters.

PREPARED STATEMENT OF SENATOR CHARLES MCC. MATHIAS, JR.

Today the Subcommittee on Patents, Copyrights and Trademarks begins hearings on S. 2171, the Uniform Patent Procedures Act of 1983. Because of a previous commitment to preside at a hearing before another committee of the Senate, I will be unable to attend all of this hearing; at my request, Senator Dole, a member of the Subcommittee and the principal sponsor of the bill, will preside this morning.

Our Nation today faces daunting challenges in world markets. The rapid progress of technological change demands that American industry keep pace or be left in the dust. One of our most important resources in this contest is our unmatched capability in research and development. American scientists, engineers, and technicians remain on the cutting edge of developments in electronics, biotechnology, and other key fields. One ingredient of this success has been Federal support, through grants, contracts, and cooperative agreements, for scientific research and development. This support continues at a level of about $32 billion annually.

But success in research and development is only part of what we need to keep pace in today's markets. We also need policies that will encourage the commercial development of inventions made with federal R&D support. Here our performance has been more problematic. All too often, the breakthroughs made in our laboratories and research centers remain on the drawing boards for far too long. Our mediocre track record in bringing to the marketplace the fruits of American ingenuity and inventiveness is reason for concern.

In this Congress, a variety of measures have been proposed to try to enhance the commercial potential of research and development efforts. These include bills to provide tax incentives for private sector research, and to relax perceived restraints on joint research ventures deriving from our antitrust laws. This subcommittee recently approved a bill to streamline patent procedures for many inventions owned by the Federal government by providing for a simple, inexpensive defensive publication system in lieu of a full-fledged patent.

Senator Dole's initiative that is before us today is equally important. It would bring greater uniformity to the patent policies of government agencies which underwrite so much important research and development. It would give greater incentives to the private sector to participate in government-funded R&D. It would encourage cooperative research efforts among the Federal Government, State governments, universities, and small and large businesses. It deserves the careful and expeditious consideration of this subcommittee, and of the Judiciary Committee and the Senate as a whole.

S. 2171 builds upon other efforts to revise our patent laws to encourage commercial development of inventions made with government support. Our hearings will be a good opportunity to reflect on where we have been, to evaluate the success of our first steps toward reshaping policy in this field, and to prepare to take the next step forward.

More than a dozen witnesses will share their views with us today. But a few of them deserve particular recognition.

Commerce Secretary Malcolm Baldrige has been a tireless advocate of the need for a more rational and effective research and development policy to meet the challenges of today's world economic arena. We are honored to have Secretary Baldrige with us, along with his Assistant Secretary for Productivity, Technology and Innovation, Bruce Merrifield, who has made government patent policy a chief concern of this office.

Governor Richard Thornburgh of Pennsylvania is here to tell us about exciting new developments in his state which bring together government, the non-profit sector, and private industry, in a shared effort to tackle technological problems and search for solutions that can benefit the marketplace. It is rare that a chief executive of a State as large as the Commonwealth of Pennsylvania can take time from his busy schedule to appear before a Senate subcommittee. So we are particularly pleased to welcome Governor Thornburgh.

Finally, we will hear from two witnesses who will testify to the crucial role played by the State of Maryland in the research and development arena. We are pleased to welcome Dr. John S. Toll, President of the University of Maryland, who will tell us about that institution's important new research efforts in the field of biotechnology, and Dr. Edwin T. Yates, the patent management officer for the Nation's leading academic research and development contractor, the Johns Hopkins University.

Once again, I want to thank Senator Dole for agreeing to preside at these important hearings.

Senator DOLE. Does anybody else have a statement they would like to make?

OPENING STATEMENT OF SENATOR HOWARD M. METZENBAUM

Senator METZENBAUM. Mr. Chairman, I am not sure I can stay for the entire hearing, but I do want to share with you concerns that I have about this legislation.

This legislation, in my opinion, is so typical of that which we do around here. We provide some sort of exemption for a specialized group, and then we come along and say that it ought to be broad based. When the exemption went through, as pertains to the matter of patents, which was sponsored by universities and small businesses, it was almost a certainty that industry would be back with this proposed legislation and say that whenever the Government pays for these research projects that the contractors ought to have the right to use the patents for whatever economic value they have.

I do not think that is the case. I do not think that this is a matter of stimulating research and development or additional technology in the area. As a matter of fact, I think it would just amount to another instance of a Government giveaway of that which it had payed for. And too often, we find the Government puts up the money, and then private industry thinks that they have a right to reap the profit from it.

I know that this legislation has some rather strong support, but I think it is fair to say that when the facts in connection with it become more evident, it will have some equally strong opposition.

In that connection, Mr. Chairman, I would ask at this time unanimous consent to include in the record, immediately following the statements of members of the committee, a statement from Admiral Rickover, whose views are opposed to this proposal.[1]

Senator DOLE. Thank you very much.

Senator Leahy.

OPENING STATEMENT OF SENATOR PATRICK J. LEAHY

Senator LEAHY. Thank you, Mr. Chairman.

I, too, have to leave for another hearing, but I have an opening statement which I would like to be made part of the record, and would also ask that a letter which my chief counsel has received from the University of Vermont regarding this matter be included in the record after my statement.

I think you should be congratulated for holding the hearings. Patent policy is probably not the No. 1 topic of the news media—at least, it normally is not on the front page—and I suspect that these hearings will not be the lead item on the nightly news tonight. But I think that the subject matter we are considering is going to have a longer lasting and more important effect on the use of new technology in the United States and the world than a lot of the things that do seem to excite the media.

You asked the question of what should be the presumption of ownership of rights to inventions created under research and devel-

---

[1] See letter to Senator Metzenbaum and statement beginning on p. 37.

opment contracts from the Federal Government, the core question of these hearings. One answer could lead to faster and broader commercialization of American inventions. But it could also have implications for domestic competition, possibly conferring a significant advantage of one firm over another, an advantage coming at Government expense.

Another question raised is whether the Government is realizing all the financial advantages it has paid for. On the other hand, should we be more concerned with the profit motive in the private sector which might so encourage commercializing that there would be a bigger boost in jobs and production.

So it is not an easy issue. I suspect that there will be some debate on it, and I would ask, Mr. Chairman, if I could, depending upon the nature of the testimony here today, have leave to submit a few questions subsequently for the record.

Senator DOLE. Fine, or to any witness who appears.

Senator LEAHY. Thank you, Mr. Chairman.

Senator DOLE. Thank you very much.

[The prepared statement of Senator Leahy and a letter from the University of Vermont follow:]

PREPARED STATEMENT OF SENATOR PATRICK LEAHY

AT THE OUTSET I WANT TO CONGRATULATE THE CHAIRMAN FOR HOLDING THESE HEARINGS ON S. 2171, THE UNIFORM PATENT PROCEDURES ACT. PATENT POLICY IS ADMITTEDLY NOT A SUBJECT OF WIDE POPULAR INTEREST, AND THESE HEARINGS WON'T BE ON YOUR FAVORITE NIGHTLY TELEVISION NEWS. BUT MAKE NO MISTAKE THE SUBJECT MATTER WHICH WE ARE CONSIDERING HERE WILL HAVE A LONGER LASTING AND MORE IMPORTANT EFFECT ON THE USE OF NEW TECHNOLOGY IN THE UNITED STATES AND IN THE WORLD THAN MANY OF THE FLASHES IN THE PAN THAT GET ALL THE MEDIA ATTENTION. SO I AM PLEASED THAT WE ARE TAKING THE TIME TO EXPLORE THESE MATTERS THOROUGHLY, AS WE SHOULD, AND YOU, MR. CHAIRMAN, DESERVE CREDIT FOR THAT.

THE CORE QUESTION PRESENTED BY THE CHAIRMAN'S BILL IS : WHAT SHOULD BE THE PRESUMPTION OF OWNERSHIP OF RIGHTS TO INVENTIONS CREATED UNDER RESEARCH AND DEVELOPMENT CONTRACTS FROM THE FEDERAL GOVERNMENT. ONE ANSWER TO THAT QUESTION MIGHT LEAD TO FASTER AND BROADER COMMERCIALIZATION OF AMERICAN INVENTIONS. THUS, IT COULD HAVE SIGNIFICANT IMPLICATIONS FOR THE UNITED STATES' ROLE IN WORLDWIDE TECHNOLOGICAL COMPETITION. BUT IT COULD ALSO HAVE IMPLICATIONS FOR DOMESTIC COMPETITION, POSSIBLY CONFERRING A SIGNIFICANT ADVANTAGE TO ONE FIRM OVER ANOTHER. AND THAT ADVANTAGE IS ONE THAT AROSE AT GOVERNMENT EXPENSE.

ANOTHER QUESTION THAT IS RAISED IS WHETHER THE GOVERNMENT IS REALIZING ALL OF THE FINANCIAL ADVANTAGE THAT IT HAS PAID FOR. PERHAPS THE FINANCIAL VALUE OF RIGHTS TO INVENTIONS CREATED BY CONTRACTORS WHILE UNDER FEDERAL CONTRACTS COULD BE USED TO DEFRAY SOME FEDERAL EXPENSE OR BE SOLD SO AS TO CONTRIBUTE TO OUR AILING FEDERAL FISC. ON THE OTHER HAND, THE PROFIT MOTIVE IN THE PRIVATE SECTOR MIGHT SO ENCOURAGE COMMERCIALIZATION THAT THERE WOULD BE A BIGGER BOOST IN JOBS AND PRODUCTION, SO THAT WOULD BE A PLUS FOR THE ECONOMY AND THE TREASURY.

WELL, THESE ARE SOME OF THE QUESTIONS, AND I WILL BE INTERESTED TO HAVE THE VIEWS OF THE WITNESSES WHEN I REACH MY DECISION ON THIS LEGISLATION.

The University of Vermont
OFFICE OF THE DEAN, GRADUATE COLLEGE
WATERMAN BUILDING, BURLINGTON, VERMONT 05405
(802) 656-3160

March 22, 1984

Mr. John Podesta
Russell Senate Office Building
United States Senate
Washington, D.C. 20510

Dear John:

This is a follow-up to our telephone conversation of March 8, 1984 in which we discussed the upcoming hearings on patent legislation (S.2171) to be held by Senator Dole on March 27, 1984. We at the University of Vermont favor the proposed extensions of PL96-517 including:

- Repeal of five year cap on the granting of exclusive license to an industrial concern.
- Management focus in the Department of Commerce rather than OMB.
- Expanded definition of invention to include "any novel variety of plant which is or may be protectable under the Plant Variety Protection Act."
- The opportunity for federal agencies to waive any condition that attach to ownership of university inventions.

In a larger sense, the above extensions suggest that revised legislation can serve as a model for continued national innovation and competitiveness. As you know, the transfer of technology from the universities to the private sector is an extremely complicated yet important activity and sound legislative guidelines will promote not only innovation in our universities and private sector organizations but at the same time make our country extremely competitive in worldwide markets. In the past two years, the University of Vermont has filed four patent applications with subject matters ranging from anti-cancer drugs to bioherbicides with three of these applications involving faculty researchers from different universities. We are now in the process of licensing two of these inventions. Negotiations are complex, time consuming, and costly especially as we move now into the area of moving the technology into the private sector. Accordingly, from our practical experiences in this area we encourage legislation that will simplify and expedite this transfer process as well as allow greater flexibility in negotiations.

As I indicated in an earlier letter to Senator Leahy, I encourage him to consider co-sponsoring the above legislation that may arise from the above referenced hearings.

I thank you for your consideration and cooperation in the above matters. Please do not hesitate to call upon me if I may be of assistance to Senator Leahy or you regarding this important area of legislation.

My best wishes to you.

Sincerely yours,

Robert B. Lawson, Ph.D.
Associate Vice President for Research
and Dean of the Graduate College

RBL:kad
cc: Senator Patrick J. Leahy
President Lattie F. Coor

Senator DOLE. I know Senator Specter has another hearing, also, and if you would like, we could hear Governor Thornburgh now. The first witness lives in Washington, so they can be called back on a moment's notice. But why don't we go ahead with the Governor, who came the longest distance.

OPENING STATEMENT OF SENATOR ARLEN SPECTER

Senator SPECTER. Thank you very much, Mr. Chairman.

I commend the chairman for the legislative initiative here and for convening these hearings and look forward to participating on this bill when it reaches the full Judiciary Committee, of which I am a member. I appreciate being called on at this time, because I am chairing another hearing.

But it is a real pleasure for me to appear here briefly to introduce Gov. Dick Thornburgh to this subcommittee. As is our custom in the U.S. Senate, we frequently make introductions when none are necessary. I shall not violate that longstanding rule, but shall be brief.

Governor Thornburgh has unique background for testifying on this important matter. He has innovated the Ben Franklin Partnerships in the Commonwealth of Pennsylvania, with a very sizable allocation of State resources in an area which touches directly upon the matters here.

Governor Thornburgh has a unique background. Although he bears a similar disadvantage to all members of this committee and myself, being a lawyer, he has the advantage of having an undergraduate degree in engineering, which gives him a little different perspective and a little different direction.

It is a special privilege for me because Dick Thornburgh and I have been friends for many years. We go back to the days when he was locking up crooks in the West and I was locking up crooks in the East, and occasionally, we would coalesce in the center to make Pennsylvania safe for law-abiding citizens.

He has been an outstanding Governor. I think his testimony will go right to a very important issue, so I am pleased to be here for these few minutes to present him to the subcommittee.

Senator DOLE. Thank you very much, Senator Specter.

[Letter and prepared statement of Admiral Rickover, submitted by Senator Metzenbaum, follow:]

MARCH 26, 1984.

Hon. HOWARD M. METZENBAUM,
U.S. Senate,
Washington, DC.

DEAR SENATOR METZENBAUM: I understand that the Judiciary Committee will be holding hearings shortly on S. 2171—a bill that would give all contractors monopoly rights to inventions developed under their contracts with the U.S. Government.

For many years, patent lawyers and contractor lobbyists have been badgering officials in the Executive Branch and in the Congress to adopt this policy. Apparently they have made headway, and the Department of Commerce is actively promoting it for all Government agencies.

Several years ago, Congress agreed to give small businesses and universities title to patents developed at Government expense. I warned at that time that large corporations would use this as a "foot in the door" toward acquiring such rights for themselves. This is precisely what is happening.

S. 2171 is a giveaway. It will lead to a greater concentration of economic power in the hands of large corporations. The Government, particularly the Defense Department, spends the vast majority of its procurement and research-and-development

funds with large contractors. I believe that Congress should not pass new laws that would enable these firms to expand their monopolies and establish new ones at the expense of the taxpayer.

Knowing of your interest in protecting the people, and your membership on the Judiciary Committee, I am bringing this matter to your attention. I have also enclosed a formal statement of my views in this matter. I should appreciate it if you would arrange to have it brought to the attention of the other Committee members. I hope you will be willing, once more, to assist in blocking this legislation.

As you may recall, Senator Russell Long is also expert in this field. He has been instrumental in looking out for the ordinary citizen on this issue for many years.

Sincerely,

H. G. RICKOVER.

Prepared Statement of Admiral H. G. Rickover

Statement on Patents

In accordance with your request, I am providing my views on the bill you are considering, S.2171, which would give all Government contractors the monopoly rights to inventions they develop under Government contracts paid for entirely by the people of the United States. This bill is the latest in a long line of similar proposed bills which are supposed to protect the public. These bills are proposed in the name of promoting technology, productivity, and economic growth for the Nation.

I have testified a number of times on such bills--most recently in September 1981 to a joint hearing of the Senate Committee on Commerce, Science, and Transportation and the House Committee on Science and Technology.

Nothing changes. The proponents of these bills contend that only a small number of Government-owned patents are being used by industry; that the public, therefore, is not getting maximum advantage from the large sums invested in Government-funded research and development; and that this is stifling technology by not getting the ideas contained in these patents to the marketplaces. Their solution is to let Government contractors have monopoly rights to inventions developed under Government contracts and paid for by the people of the United States. The premise behind this approach is that with monopoly rights to the inventions, contractors will have an incentive to develop and market inventions that otherwise would not be used.

My views have not changed. After more than 40 years of dealing with research-and-development work in high technology areas, I am convinced that contractors--particularly large companies--should not be given title to Government-financed inventions. I believe that enactment of this bill would constitute a subsidy to large Government contractors and reduce

competition. I recommend, therefore, that Congress not enact S.2171.

Companies that contract for research and development work generally insist on retaining title to all inventions that may result under the contract--in other words, the rights belong to the party that pays for the work. For Government contracts, this bill would reverse this situation--the one who received the contract, rather than the one who paid for the work, would retain the patent rights.

If we carry this idea to its logical extension, companies should give their employees the rights to inventions developed in the course of their employment. This is rarely, if ever, done.

Many members of Congress are in favor of minimizing Government intervention in the marketplace. This bill, however, would increase such intervention.

The large sums the Government spends on research-and-development work--particularly by the Department of Defense--have an unavoidable impact in the private sector. Inevitably, the lion's share of Government research-and-development expenditures goes to large corporations, since they alone have the facilities, the resources, and the background necessary to undertake most major research-and-development programs.

These contracts provide know-how and experience that give these firms a great advantage over potential competitors. To go a step further, and to give these contractors monopoly rights to the resulting technology is to promote an even greater concentration of economic and political power in large corporations.

I do not subscribe to the notion that patent monopolies are necessary to promote technology. Good ideas are used, with or without patents. There will always be inventors who contend they have a wonderful invention that no one will finance without exclusive patent rights. My many years of experience, however, show that behind the claims of these inventors lie difficult,

costly, practical problems. The real reason their ideas are not adopted has little, if anything, to do with the patent aspects.

In my view, the purpose of the Government in acquiring title to patents it has financed is not to earn money from the patent or for the Government to become the salesman or promoter of the inventions. Rather, the purpose is to ensure that no obstacles are set up to prevent the public from using inventions for which it has paid.

Perhaps the same objective could be achieved by legislation that would make any inventions developed at Government expense unpatentable. Alternatively, if Congress ultimately decides that granting exclusive rights to contractors will promote the use of worthwhile technology, it should likewise set up a system to assign these rights by public sale through competitive bidding. In that way every citizen interested in the invention would have an equal opportunity to buy the rights.

The question may arise: "If there is little evidence that Government-owned patents are being used; if the vast majority of them are of little commercial value; and if Congress thinks the Government should not view these patents as income-generating devices, what is wrong with letting large Government contractors have them?" The answer is two-fold:

First, it would be wrong for the Government to finance an important breakthrough only to find itself in the position where the contracter has a 17-year monopoly, during which time he alone--for all practical purposes--could decide whether to make the invention available for public use and at what price.

Second, large Government contractors would have a strong incentive to file patent applications covering even insignificant items encountered in their Government contracts. By so doing they could further discourage competition in their fields, regardless of the merits of these patents or whether they would survive a court test.

No doubt you have been told that not allowing contractors to have title to inventions would deter companies from undertaking Government work. My own experience is to the contrary. I cannot recall a single case of a contractor refusing Government work because of our policy of retaining rights to Government inventions in the quarter of a century I headed the Naval Nuclear Propulsion Program. Although patent lawyers have a strong interest in such matters, I found that the top officials of most companies with whom I dealt did not consider patents a significant problem. They wanted my work because of the profit potential it offered and because it enhanced their experience and know-how.

This bill is but one of many that have been introduced in recent years designed to give contractors title or exclusive rights to the inventions developed under their Government contracts and at Government expense. The rationale for these bills has varied to fit the times. If this bill is not enacted, I expect that contractors will produce other rationales to achieve their purpose. Congress must be constantly watchful in this area so the public is protected.

In summary, inventions paid for by the Government should belong to the public, and all citizens should have an equal opportunity to use these inventions. This is only what contractors themselves ask of their subcontractors in their own private work. Why should the people of the United States be treated in a manner inferior to the way businesses deal with other businesses?

Proposed changes regarding ownership and use of patents developed at public expense are always presented under the banner of high-sounding principles and purposes. Having observed this matter for many years, I am fully convinced that the proposed changes are contrary to the best interests of the people of the United States.

Senator DOLE. Governor, we would be pleased to hear from you now. Your entire statement will be made a part of the record, and you may proceed in any way you wish. If you can summarize it, it will be appreciated.

STATEMENT OF HON. DICK THORNBURGH, GOVERNOR, COMMONWEALTH OF PENNSYLVANIA

Governor THORNBURGH. Mr. Chairman and members of the subcommittee, I am pleased to have the opportunity to testify before you today in support of S. 2171, the Uniform Patent Procedures Act of 1983.

As the Governor of the Commonwealth of Pennsylvania and also as cochairman of the National Governors' Association Subcommittee on International mpetitiveness of our Committee on International Trade and For..gn Relations, I am very much aware of the need to strengthen the competitiveness of American business in the international marketplace.

In my view, this legislation if enacted will be of great benefit in achieving this end through its encouragement of increased commercial application of the research and development work of our Federal laboratories.

The history of this country has been one of harnessing the latest in technology to our economic needs, whatever they might be. The current situation is no different. If we are to maintain our economic leadership and maintain our economic competitiveness with other countries, we must do all within our power as Government leaders to facilitate the transfer of knowledge and research to new applications, new products, and new processes.

S. 2171 recognizes Government's legitimate catalyst role in a number of ways. It would permit university ownership of inventions resulting from research in agriculture, something that is very important to our State; permit university ownership of inventions made while those universities are managing Government-owned laboratory facilities; permit ownership of inventions by contractors who manage Government-owned laboratory facilities; maintain reporting procedures that minimize redtape and bureaucratic confusion. It would permit Federal agencies to waive any of the conditions that attach to ownership of university inventions when, in the public interest, such as a coventure, in order to create greater flexibility in university-industrial collaboration.

Finally, it would repeal the 5-year cap on the grant of exclusive licenses to an industrial concern. Perhaps of greatest significance, however, the bill would establish within the U.S. Department of Commerce an overall responsibility to oversee and report on this act, and to exercise a leadership role in creating a climate favorable to the commercialization of the results of federally funded research.

There are over 380 Federal laboratories in the United States. Those eight which are located in Pennsylvania perform research in areas ranging from coal and forestry to food quality. We should be certain that we are taking maximum advantage of their resources and results to stimulate economic growth in this country. Although these laboratories perform a significant amount of the research

taking place in our Nation today, they have not always been as aggressive as they might be in transferring their technology from the laboratory to the private sector.

S. 2171 will create stronger incentives for industry, inventors, and Federal laboratories to work together. This collaboration assumes an even greater importance when one realizes that for the past 4 years, the private sector has paid more of the cost of research and development in this country than the Federal Government. Overall, in 1983, the Federal Government spent $39.6 billion, and the private sector, $44.3 billion, on research and development. Most private sector funds, however, are spent on development and not on basic research.

In 1983, the Federal Government spent $7 billion on basic research, while private industry spent only $2 billion. The Federal Government has been, and in my estimation, should continue to be the most important supporter of basic research aimed at advancing scientific knowledge. However, where this basic research results in commercial potential, this should and must be capitalized upon, and mechanisms must be established to enable the rapid conversion of this potential into actual application in the marketplace.

This legislation provides overdue recognition of the basic principle that we ought to permit the private enterprise system to do what it does best—produce new products and thus, jobs, which the public wants and needs.

Let me also indicate, Mr. Chairman, that passage of S. 2171 would also complement efforts of the States to foster and encourage technological innovation. As vice chairman of the National Governors' Association Task Force on Technological Innovation, I am aware of the wide range of approaches and techniques that the States are adopting to build improved relationships between our colleges and universities and the private sector. While most States do not have State research laboratories, which are the equivalent of their Federal counterparts, we do have another resource that is critical to technological innovation: Our network of colleges and universities. Perhaps one State's experience would be instructive.

Pennsylvania has undertaken a number of initiatives in recent years to utilize the talents and capabilities found in our academic and private research sectors. In February of 1982, for example, I proposed that the Pennsylvania General Assembly approve the establishment of our Ben Franklin Partnership, named after that distinguished Pennsylvanian who epitomized and combined the roles of inventor, educator, small businessman, and political economist.

In February 1983, Pennsylvania's Ben Franklin Partnership Board designated four advanced technology centers, and we provided the first $1 million dollars in State funding for their first 6 months of operation.

While our program requires a $1 match of private and other funds for every $1 of State funds, we actually received over $3 in match for each public dollar appropriated.

For the current fiscal year, I proposed and the general assembly provided $10 million in State funds, this time, matched by $28 million in other funds, including $16 million from the private sector. The current program is funding 219 projects throughout the Commonwealth. The response has been so gratifying that for the State's

next fiscal year beginning July 1, I have proposed to double State support of this program to $20 million. All our projections are that our private sector response will continue to grow apace.

Each of our four centers serves as a consortium, linking together higher education institutions and the private sector. Involved in these consortia are business, labor, education, and other groups and organizations. Each center undertakes three kinds of activities: joint research and development, education and training, and entrepreneurial development.

Over 1,500 firms are involved, and 79 of Pennsylvania's 135 higher education institutions are linked to one or more of our centers.

This is not merely a subsidy to fund additional research. It is job-oriented and designed to foster real economic growth. Unlike traditional university research and development, the Ben Franklin Partnership requires that private sector commitments come first. Where there is a definite private sector interest and need, for example, for research and development, that firm discusses the proposal with the applicable center and develops a joint proposal. Each of our centers is limited to three or four research and development areas in which to concentrate its activities—areas where there are university capability and expertise, along with private sector interest. Contractual and other arrangements are worked out between each center and the private sector participants, with flexibility being the basic ingredient. Our patent policies are, interestingly enough, very similar to those you are considering in the legislation before you.

In addition to their research and development function, each center undertakes education and training activities to assist in filling what we call "gaps" that cannot be filled by other education and training programs. For example, one of our centers is working with a community college, sharing expensive equipment, redesigning a new course and curriculum, and training the community college faculty to offer courses in areas of future growth.

Regarding entrepreneurial development, each of our centers provides a range of services, from helping an entrepreneur prepare a business plan to approaching financial institutions for loans or venture capital to actually providing incubator space in which a start-up firm may locate. Low-cost, low-rent space and shared facilities provide a suitable environment in which a new firm can start, while maintaining close access to a research university. Several such incubators are already in place in Pennsylvania, and more are planned.

The Ben Franklin Partnership provides an example of a State initiative in bringing research and the private sector together. Just as you are attempting to do with the provisions of S. 2171, we in Pennsylvania are trying to move more rapidly to commercialize our research and development, either into new firms with new products, or into new processes that can help our existing and traditional industries modernize and survive.

"Spinning in" technologies to our coal or steel industries is equally important as our efforts to "spin off" new products to create new firms on the leading edge of technology. Examples of research and development projects currently underway through

the Ben Franklin Partnership include transfer of robotics and technology to eight small machine shops and industries in western Pennsylvania, application of new technologies to steel firms and glass firms, and redesign of construction methodology with computer-assisted design and manufacturing techniques.

Much of our knowledge in many of the basic sciences has been discovered since 1950. Increasingly, this knowledge affects our everyday lives and is likely to increase further. The extent to which our existing industries apply these technologies to their manufacturing processes and we are able to move our research and development results into new firms and new markets will determine to a great degree the extent to which we can provide new, permanent, and meaningful job opportunities for Americans of all occupations.

In less than 1 year, our Ben Franklin Partnership program has assisted in establishing 20 firms and assisted another 7 firms in expanding. We believe the results will be even more dramatic over the long term.

The Congressional Office of Technology Assessment recently released a report indicating that much of the focus for technological innovation in this country was shifting to the States. Legislation such as that before you today will enable States such as Pennsylvania to further our economic development by involving Federal laboratories more closely in our technological initiative. No new Federal dollars are required. All that is needed is a new flexibility to nurture the private sector/university relationships already under way by facilitating their links with Federal laboratories.

I appreciate the opportunity to appear before you today and would welcome any questions that you might have.

Thank you, Mr. Chairman.

Senator DOLE. Senator Metzenbaum?

Senator METZENBAUM. Governor Thornburgh, as you well know, you have spoken a good deal about universities. You say that S. 2171 would permit university ownership of inventions resulting from research in agriculture, and permit university ownership of inventions made while these universities are managing Government-owned laboratories. You talked several times about the universities. The fact is, there is legislation with respect to the universities and small business firms, and this particular legislation is described as "patent rights and inventions made with Federal assistance by other than small business firms or nonprofit organizations."

So that I think we do not want to confuse the issue. And it seems to me that much of your testimony, which was certainly excellent, and much of which I can support in its thrust—but I do not think it addresses itself to the real issue that concerns this Senator, and that is that, should the Federal Government pay for inventions to be created, developed, and the research in connection with those inventions, and then permit the private sector to reap the benefit.

Now, there is nothing in the law that says that those inventions could not be developed, and then they could be auctioned off, or they could be made available to a number of different private industries, and would not provide the advantage of one company having them.

I wish you would address yourself to that aspect of it.

Governor THORNBURGH. Well, may I observe first, Senator Metzenbaum, that I am well aware of the provisions of Public Law 96-517, which affects the patent accessibility which you describe. I must point out that part of the thrust of my testimony was to indicate that it is very difficult in the kinds of consortia that we have established in Pennsylvania and that I believe are being undertaken in your State of Ohio and other States, to identify precisely who the ultimate beneficiary of the availability of those patents will be, because of the nature of cooperation between universities and business entities in the private sector.

I think what I am suggesting is that the philosophy embodied in the already extant legislation ought to be extended to all private sector participants in these joint research and development efforts, so that any confusion that exists over the availability of the patents on the basis set forth in present law be dispelled and that more opportunities be opened up to capitalize on those development processes that follow the availability of the patents.

Senator METZENBAUM. Governor Thornburgh, does it disturb you at all that the Federal Government will be putting up the money and that—although you say it does not cost any Federal dollars—the fact is there are Federal dollars involved. It is not a direct appropriation, but if there is a reward to be gained by some exciting new invention, then the Federal Government is not going to get that reward; it is going to go to the private sector.

Now, doesn't that concern you, as a Government official, that the Government would not be reaping the benefits, or only the benefits that are gained by reason of that which we always talk about—more employment, more competition against our competitors—the same generalities that all of us use in those great speeches that Senator Dole and I make.

Governor THORNBURGH. Senator, the long-term benefits that I see from the changes being introduced by this bill are the availability of more employment opportunities to working men and women in this Nation.

And no, it does not disturb me that the Federal Government in this instance should supplement existing and sometimes misguided efforts to spend tax dollars to try to create jobs. It seems to me that there is a much higher likelihood of payoff in new job opportunities in a segment of the economy that is bound to grow in this decade and years following from this type of effort than in some of the programs, so-called job-creating programs, where immense amounts of Federal dollars have been forthcoming without any measurable impact on the economy or the availability of jobs.

I see this, based on our own experience in Pennsylvania in transferring technological know-how from the laboratory to the production line, as having enough of a potential for creating those new job opportunities to put at risk the minimal amount of dollars that would be involved as you describe it—although I must note that it would not involve any direct Federal appropriation to this program.

Senator METZENBAUM. Let me ask you, since this new invention that is going to be developed in your State, my State, or wherever, and is then going to redound to the benefit of the private sector, would it not be better, from the standpoint of producing more jobs,

to cause it to redound to the benefit of any and all companies that wanted to use it? Wouldn't we have that many more jobs if we were to do that?

For example, let us assume there is a new carburetor that is developed, and Ford Motor Co. provides some of the funding in connection with one of your programs. If that were made available to the other three major automobile manufacturers, it might very well produce better cars in this country, get better gas mileage, it might cause more people to buy American cars rather than foreign-made cars. Wouldn't you then advocate that if such inventions are going to be made available to the private sector that they be made available to any and all persons in the private sector?

Governor THORNBURGH. Well, I think if we lived in a perfect world, I might support that thesis, but I think that the incentive for commercialization that is inherent in our whole theory of patent law is to provide a limited advantage to the person who develops the theory into the practice. And in my view, I think that that might be stunted and frustrated by the policy that you suggest.

It seems to me that what we are talking about here, day in, day out, in this Nation, is ways and means by which we could capitalize on the advanced technology explosion that is taking place in this Nation and around the world. This may be a very small part of that effort. But coupled with the activities that I described as taking place at the State level, it sends a very positive signal, it seems to me, as to the emphasis that we as a nation and the emphasis which the Federal Government, which controls, as I indicated, so much of the basic research funding that is undertaken, is putting on the commercialization and actual realization of these advance technology developments into economic growth that means real jobs for working men and women.

So I think that while the limited protection in point of time that is provided under our patent laws does create an advantage for an individual who undertakes the actual commercialization and practical use of these types of research and development, that that is something that has long been realized as an appropriate incentive to spur the development of that technology.

Senator METZENBAUM. I agree with your last point and that is the reason I think that, since the Federal Government is providing the money, the Federal Government ought to gain the economic advantages that may develop as a consequence of the invention.

Mr. Chairman, I know you have many other witnesses, and I do not want to impose on the Governor's time or yours.

Governor THORNBURGH. If I might, Mr. Chairman, I would suggest with all deference—and I was once a Federal bureaucrat myself, so I include myself—that the Federal Government's track record of capitalizing on technological breakthroughs on its own and managing the development of new products out of basic research is not all that good. And under our free enterprise system, I think we put our money down on the kind of effort that has been made and built this country into the technological leader that we have been over the years.

Senator METZENBAUM. I do not disagree with what you said, but I think that then it is our responsibility to see that the bureaucracy

does some of the things that they should do, rather than changing the law because they failed to do it well.

Senator DOLE. Following my prepared statement there is a sectional analysis of the bill itself, so the record will reflect just what we do intend to do with 2171, as opposed to the earlier legislation I worked on with former Senator Bayh.

I have no questions, Governor. I think you have demonstrated by your presence that you have a deep concern, and obviously, you have a successful program in Pennsylvania. I can think of a lot of areas where we give R&D credits through the Tax Code that nobody seems to be concerned about, but maybe Senator Metzenbaum is——

Senator METZENBAUM. Oh, yes. [Laughter.]

Senator DOLE. We had a $2 billion provision in the bill we just passed in the Finance Committee last week for R&D, and we do not control there what happens with that indirect Federal resource.

Plus, we are facing massive trade deficits. We find, particularly with the Japanese, where the Government works sort of hand-in-glove with business, that we are losing the competitive advantage in many parts of the world, and we have a lot of people running around saying we ought to have an industrial policy. We ought to create some bureaucracy to pick the winners and losers. I would not want to be the picker, but it would seem to me that idea is a loser to start with. But there are a lot of losers on the landscape.

We do appreciate your being here. I hope we have a good debate. I think Senator Metzenbaum has raised some very good questions. I understand his reservations. If the Government is going to put up all the money, why should somebody walk off and make a big profit?

But the problem is, a lot of inventions are out there in which the Government has no interest, and they are never developed. So in fact, it is a question of doing something or nothing. We do have certain protections in the bill. For instance, contractor ownership of inventions is not permitted where national security is involved.

So maybe this is not a momentous piece of legislation, but it is highly important in the sense that it would result in the development and commercialization of inventions that currently are just being stockpiled by the Government.

Thank you.

Governor THORNBURGH. Thank you.

[The prepared statement of Governor Thornburgh follows:]

PREPARED STATEMENT OF DICK THORNBURGH

Mr. Chairman, Members of the Subcommittee: Thank you for the opportunity to testify before you today in support of S. 2171, the Uniform Patent Procedures Act of 1983. As Governor of the Commonwealth of Pennsylvania and Co-Chairman of the Subcommittee on International Competitiveness of the Committee on International Trade and Foreign Relations of the National Governor's Association, I am very much aware of the need to strengthen the competitiveness of American business in the international marketplace. In my view, this legislation, if enacted, will be of great benefit in achieving this end through its encouragement of increased commercial application of the research and development work of our federal laboratories.

The history of this country has been one of harnessing the latest in technology to our economic needs—whatever they might be. The current situation is no different. If we are to maintain our economic leadership and maintain our economic competitiveness with other countries, we must do all within our power, as government

leader, to facilitate the transfer of knowledge and research to new applications, new products, and new processes.

S. 2171 recognizes government's legitimate catalyst role in a number of ways. It would:

Permit university ownership of inventions resulting from research in agriculture.

Permit university ownership of inventions made while those universities are managing government-owned laboratory facilities.

Permit ownership of inventions by contractors who manage government-owned laboratory facilities.

Maintain reporting procedures that minimize red tape and bureaucratic confusion.

Permit federal agencies to waive any of the conditions that attach to ownership of university inventions when in the public interest, such as a co-venture, in order to create greater flexibility in university-industrial collaboration.

Repeal the five-year cap on the grant of exclusive licenses to an industrial concern.

And, perhaps of greatest significance, the bill would establish within the United States Department of Commerce an overall responsibility to oversee and report on this Act, and to exercise a leadership role in creating a climate favorable to commercialization of the results of federally-funded research.

There are over 380 federal laboratories in the United States. The eight in Pennsylvania are performing research in areas ranging from coal and forestry to food quality. We should be certain that we are taking maximum advantage of their resources and results to stimulate economic growth in this country. Although these laboratories perform a significant amount of the research taking place in our nation today, they have not always been as aggressive as they might in transferring their technology from the laboratory to the private sector.

S. 2171 will create stronger incentives for industry, inventors and federal laboratories to work together. This collaboration assumes an even greater importance when you realize that, for the past four years, the private sector has paid more of the cost of research and development in this country than the federal government. Overall in 1983, the federal government spent $39.6 billion and the private sector $44.3 billion on research and development. Most private sector funds, however, are spent on development, not on basic research. On the contrary, in 1983, the federal government spent $7 billion on basic research while private industry spent only $2 billion.

The federal government has been, and in my estimation should continue to be, the most important supporter of basic research, aimed at advancing scientific knowledge. However, where this basic research results in commercial potential, this should, and must be capitalized upon and mechanisms must be established to enable the rapid conversion of this potential into actual application in the marketplace.

This legislation provides overdue recognition of the basic principle that we ought to permit the private enterprise system to do what it does best—produce new products, and thus jobs, which the public wants and needs.

Let me also indicate, Mr. Chairman, that passage of S. 2171 also would complement efforts of the states to foster and encourage technological innovation. As Vice-Chairman of the National Governors' Association Task Force on Technological Innovation, I am aware of the wide range of approaches and techniques that the states are adopting to build improved relationships between our colleges and universities and the private sector. While most states do not have state research laboratories which are the equivalent of their federal counterparts, we do have another resource that is critical to technological innovation: our network of colleges and universities.

States such as Pennsylvania have undertaken a number of initiatives in recent years to utilize the talents and capabilities found in our academic and private research sectors. In February of 1982, for example, I proposed and the Pennsylvania General Assembly Assembly approved the establishment of our "Ben Franklin Partnership," named after that distinguished Pennsylvanian who epitomized the roles of inventor, educator, small businessman, and political economist.

In February of 1983, Pennsylvania's Ben Franklin Partnership Board designated four Advanced Technology Centers and we provided the first $1 million in state funding for their first six months of operation. While our program requires a $1 match of private and other funds for every $1 of state funds, we actually received over $3 in match for each public dollar appropriated. For the current fiscal year, I proposed and the General Assembly provided $10 million in state funds—this time matched by $28 million in other funds including $16 million from the private sector.

The current program is funding 219 projects throughout the Commonwealth. Our response has been so gratifying that, for our state's next fiscal year beginning July

1, I have proposed to double state support of this program to $20 million. All projections are that our private sector response will continue to grow apace.

Each of our four centers serves as a consortium, linking together higher education institutions and the private sector. Involved in these consortia are business, labor, education and other groups and organizations. Each center undertakes three kind of activities:

Joint research and development.

Education and training.

Entrepreneurial development.

Over 1,500 firms are involved and 79 of Pennsylvania's 135 higher education institutions are linked to one or more of our centers.

This is not merely a subsidy to fund additional research. It is job-oriented and designed to foster real economic growth. Unlike traditional university research and development, the Ben Franklin Partnership requires that private sector commitment, come first. Where there is a definite private sector interest and need, for example, for research and development, that firm discusses the proposal with the applicable center and develops a joint proposal. Each of our centers is limited to three or four research and development areas in which to concentrate its activities—areas where there are university capability and expertise along with private sector interest. Contractual and other arrangements are worked out between each center and the private sector participants—with flexibility being the basic ingredient. Our patent policies are, interestingly enough, very similar to those you are considering in the legislation before you.

In addition to their research and development function, each center undertakes education and training activities to assist in filling what we call "gaps" that cannot be filled by other education and training programs. For example, one of our centers is working with a community college, sharing expensive equipment, redesigning a new course and curriculum, and training the community college faculty to offer courses in areas of future growth.

Regarding enterpreneurial development, each of our centers provides a range of services, from helping an entrepreneur prepare a business plan to approaching financial institutions for loans or venture capital to actually providing "incubator space" in which a start-up firm may locate. Low-cost, low-rent space and shared facilities provide a suitable environment in which a new firm can start, while maintaining close access to a research university. Several such incubators are already in place in Pennsylvania and more are planned.

The Ben Franklin Partnership provides an example of a state initiative in bringing research and the private sector together. Just as you are attempting to do with the provisions of S. 2171, we in Pennsylvania are trying to more rapidly commercialize our research and development, either into new firms with new products or into new processes that can help our existing and traditional industries modernize and survive. "Spinning in" technologies to our coal or steel industries is equally important as our efforts to "spin off" new products to create new firms on the leading edge of technology. Example of research and development projects currently underway through the Ben Franklin Partnership include transfer of robotics technology to eight small machine shops and industries in Western Pennsylvania, application of new technologies to steel firms and glass firms, and redesign of construction methodolgy with computer-assisted design and manufacturing (CAD/CAM) techniques.

Much of our knowledge in many of the basic sciences has been discovered since 1950. Increasingly, this knowledge affects our everyday lives and is likely to increase further. The extent to which our existing industries apply these techologies to their manufacturing processes and we are able to move our research and development results into new firms and new markets will determine, to a great degree, the extent to which we can provide new, permanent and meaningful job opportunities for Americans of all occupations.

In less than one year, our Ben Franklin Partnership program has assisted in establishing 20 firms and assisted another seven firms in expanding. We believe the results will be even more dramatic over the long term.

The Congressional Office of Technology Assessment recently released a report indicating that much of the focus for technological innovation in this country was shifting to the states. Legislation such as that before you today will enable states such as Pennsylvania to further our economic development by involving federal laboratories more closely in our technological initiatives.

No new federal dollars are required. All that is needed is a new flexibility tc nurture the private sector-university relationships already under way by facilitating their links with federal laboratories.

I appreciate the opportunity to appear before you today, and I would welcome any questions you may have.

Senator DOLE. Dr. Merrifield, we appreciate your deferring to the Governor. Are you from Pennsylvania, by chance?

Dr. MERRIFIELD. No. Connecticut.

Senator DOLE. You are safe, then.

Our next witness will be the Honorable D. Bruce Merrifield, Assistant Secretary of Commerce for Productivity, Technology and Innovation.

We would appreciate it if you could highlight your statement. We do have a number of witnesses, and I have another meeting at 11:45. So it is either going to be late this afternoon, or speeding up the process this morning. I think most witnesses would rather speed it up this morning.

Senator METZENBAUM. Dr. Merrifield, when you make your statement, I notice you have some charts with you——.

Dr. MERRIFIELD. Those are not mine.

Senator METZENBAUM. OK, OK. I just did not think that the whole question of imports/exports—we all know that problem. We would like to know why do we have to give the private sector this special privilege.

STATEMENT OF HON. D. BRUCE MERRIFIELD, ASSISTANT SECRETARY OF COMMERCE FOR PRODUCTIVITY, TECHNOLOGY, AND INNOVATION, ACCOMPANIED BY NORMAN LATKER, DIRECTOR, FEDERAL TECHNOLOGY MANAGEMENT

Dr. MERRIFIELD. Mr. Chairman, I appreciate the opportunity to testify on this topic. I think it is much more important than, perhaps, we realize. The leverage factors are very, very significant.

I have brought with me Mr. Norm Latker, who is our Director of Federal Technology Management. I would like to enter my written statement in the record and then comment.

Senator DOLE. It will be made a part of the record.

Dr. MERRIFIELD. I think this is an important piece of legislation, and it is in the national interest that we do this.

The pathetic comment that I have to make is that we have about 28,000 Government patents but less than 4 percent have ever been licensed. That is not a good record. There is a very good reason for this. I have managed research and development for many years in the private sector. It would be the height of folly for me to undertake the development of some Government technology on a nonexclusive license, spending maybe millions of dollars not only in technical research, but commercial development, take the product into the market, and then have all my competitors walk in at a fraction of my cost and use the same technology. That is why these patents have never been licensed.

Senator METZENBAUM. Dr. Merrifield, I do not mean to be rude and interrupt you, but would you address yourself to the question that I suggested in my opening remarks? That is, I understand that. I came out of the business community. I know you do not want to spend a lot of money and then have somebody come in and knock it off at a much lower figure. But the question I have is,

what if we auctioned off the right to go forward and develop Patent No. 3792.

Dr. MERRIFIELD. Well, basically, what we are trying to do now in the Center for Utilization of Federal Technology in NTIS is to grant exclusive licenses now for the first time, and as a result, we have licensed several hundred patents. They are generating tens of millions of dollars of research as a result, and potentially, hundreds of millions of dollars of sales.

You see, the alternative is a nonexclusive licensing situation where nothing happens. We have a good record to substantiate that—28,000 patents, of which less than 4 percent have been licensed. All right. Now, if those are exclusively licensed, then the incentive is available for individual entrepreneurs to develop that technology and commercialize it. The payback to the government is 100 times greater than it ever would be otherwise, through tax dollars that come back to the Government and in terms of profits that are generated by that company. What happens to those profits? They are plowed back into more R&D, more developments and expansion of operations to create jobs.

Don't you see, the leverage factor is enormous to the Federal Government. That is the only way it happens.

Senator METZENBAUM. Dr. Merrifield, we get that same argument, every time he comes up with one of his gimmicks for R&D for tax incentives or some one of 1,000 other things that come out of that committee. They are all going to be better for the economy; they are going to make America greater; they are going to make us compete better.

Now, my question is—and I am not even questioning them, I agree with much of that—my question is you, you got a great patent idea. Somebody developed it at some particular research laboratory, which has been paid for by the U.S. Government. Now, I understand you have to give it out on an exclusive basis. Why can't you do it by auctioning off the rights to develop that particular patent?

Dr. MERRIFIELD. Well, first of all, the people in the government laboratories are not significantly attuned to what the commercial potential of their technology is. A lot of these patents should never have been patented. A lot of that technology is worthless. A lot of other technology probably should have been patented, but they did not understand the commercial significance of it.

The point is that there is a gap between the fundamental level of research that is done in our government laboratories and the commercialization process. They are two different worlds that have to be put together. The only people who are competent to commercialize technology are private sector companies—the Government is not competent to commercialize anything, and we have a marvelous record for that. The only way we are going to get anything out of this is to allow contractor ownership, which does provide the incentives for commercialization and the ultimate tax benefits to the Federal Government.

Senator METZENBAUM. Well, what you are saying is that you ought to grant them, and I am saying you ought to sell them to the highest bidder. Now, I understand that you may not be able to know which ones are good and which ones are bad. But when you

are granting an exclusive license, you know that one, somebody thinks is good. Now, if somebody wants it, you could very well make it available on the basis that anyone who wanted a particular patent to be put up for bid, it would be done. So you would not be putting them all up for bid. But I think the concern I have is why the Government is not willing to take some money back for what it has put out.

Dr. MERRIFIELD. The Government does get back much more money than it ever puts out as a result of contractor ownership. This has been pretty nicely demonstrated by the university situation already in the small business community, where access to patent rights has been granted. It has already stimulated tremendous activity there.

Mr. Latker would like to comment.

Mr. LATKER. In order to auction off the inventions, you would first have to take them away from the originator, and taking them away from the originator loses all of the originator's expertise and the incentive that he has already to move forward in the system, given the appropriate property rights. So, losing the originator, and then auctioning them off on some kind of an exclusive basis, there has to be a loss of potential inventions on the basis of losing the advocate in the system.

Senator METZENBAUM. It reminds me of what Mr. Thornburgh said, and that is the bureaucracy. The bureaucracy around here always tells us why we cannot do something, but I do not understand it. It seems to me you could work that problem out so the originator would be a participant.

Mr. LATKER. The evidence in the bureaucracy is that they are not able to pick winners and losers to the same extent that the industry people are.

Senator METZENBAUM. Have you ever tried doing it?

Mr. LATKER. Yes.

Senator METZENBAUM. Tell me when—the matter of auctioning them off or making them available for development.

Mr. LATKER. I served as the patent counsel for the Department of Health, Education and Welfare for approximately 15 years, and during that period, it became very evident that the accumulation of the patent portfolio and attempts on my own office's part were poor in relation to what was going on in the university sector, they given the right—"they" being the originators——

Senator METZENBAUM. I asked you whether you had ever tried it. How did you try it?

Mr. LATKER. Well, we had a small licensing program at HEW that never really did too much. That is not to say that, from time to time, we were not successful in licensing something; but, at the same time, the evidence in the university sector, again, where the originator was, was a far better performance. And, of course, I fail to see why we need to take the invention away from the originator, then the Government attempt to license, only to end up in the same position. Even if we were as successful as the university, you would just end up in the same spot that you were——

Senator METZENBAUM. Well, the Government would be getting some revenue, but maybe that is not important. If the private sectors goes out and uses that invention that was created by the origi-

nator, I assume that in most instances, they make some arrangements with that originator—I do not know whether he gets a royalty or what he or she does get out of it—and I do not see why that still could not be done by the Government. But what I find is this sort of roadblock. The Government says, "No; the only way we can do it is to turn it over to the private sector." I am saying OK, turn it over to the private sector, but why choose General Electric instead of Westinghouse?

Dr. MERRIFIELD. Well, the facts of life are that that does not happen, and incentive is probably the most critical factor involved. The other point is that any revenues that the Government would receive from royalties on license technology is miniscule compared with the net benefits when you create a whole new business and generate all sorts of sales and profits which pay taxes. There is a multiplier factor involved. It is a much more effective concept.

Senator METZENBAUM. That is the reason he gets all those special R&D, $2 billion in tax credits. That is the reason we have energy tax credits. I hear of all these wonderful things that are happening. I also know that there is a $200 billion deficit.

So it just seems to me that you can achieve everything you want if you move to do so, but you have not made any effort to try to provide some competition in making this $39 billion that the Government spends—I think that is the figure that was mentioned by Governor Thornburgh——

Dr. MERRIFIELD. More than that now.

Senator METZENBAUM [continuing]. More than that—in order to bring some return to the Government, other than just creating jobs and indirectly causing some taxes to come back.

Dr. MERRIFIELD. Well, I guess we get down to the bottom line, that the evidence is that we now do not mobilize this tremendous resource, and it is critical that we do this. We are in a much more rapid period of change than the world has ever seen.

George Berry, the former dean of the Harvard Medical School, has pointed out that this period in which you and I are now living may one day be recognized as the second great divide in human history, the first being the emergence of civilization 10,000 years ago—more change in the next 10 or 20 years than has happened in all of history before this. And we are caught up in this period. It is a world market now. We are really under tremendous pressure. If we are going to be competitive in these world markets, we do have to mobilize our resources. We do have them, too. We have the advanced technology, more so than any other nation in the world. We have the best industrial infrastructure. We have the entrepreneurial culture, the best capital development capability, and the world's largest market. But unless we mobilize these resources effectively—and we are not doing that now; we have put all sorts of barriers in the way of utilizing these resources, and this is one of them. Here is $40, $45 billion a year now of Federal research that has tremendous ultimate potential. It is in an early stage, it is in a fundamental stage of development, usually—a long way from commercial development. It takes 7 to 10 years for a new development to become commercial. Only 1 out of 20 things that ever starts out in a laboratory ever produces a positive cash flow. It is a high-risk, long-term thing. We have to have incentives. We have to get the

barriers out of the way, if we are going to mobilize this incredible resource base that we have and take advantage of that to be competitive in these world markets. Other nations are targeting our industries. No individual company in this country can stand up to such a thing.

Senator METZENBAUM. That is exactly what I knew you were going to say. That is the reason I looked at the charts. I knew you were going to tell me it is going to solve our problems with Japan. Go out and make these available to Ford and General Motors and Chrysler all at the same time, and give them a chance to use them. Instead of that, you are holding them, and you are not making them available on a competitive basis. You are doing nothing about it. And it is the responsibility of the Department of Commerce to do something about it.

Nobody has told me that there has been any effort made by the Department of Commerce to try to stimulate activity in the private sector, unless you give them exclusivity. OK, give them exclusivity, but get something back for the Government. And you have not done anything along that line.

Dr. MERRIFIELD. Oh, yes, we are, and by the way, I am glad you mentioned this, because the Japanese are very frightened about this. If this bill goes through, it seals off the availability of this fundamental pool of knowledge from them, and they are very unhappy about this, because right now, basically, what has happened is the Japanese and the Europeans dip into this pool—it is freely available to the whole world—and they are providing the incentives without the barriers. An example is the ceramic engine, which is going to have a major impact on the automobile people in the next few years. We originated that technology, but they developed it further.

Senator DOLE. I might say before Senator Metzenbaum leaves, it is like stealing somebody's amendment. You would not want to do that.

Senator METZENBAUM. Oh, no way would I do that. I have never done that. [Laughter.]

Senator DOLE. I think you have covered the bulk of your statement. I want the record to reflect that this bill could result in no cost to the Federal Government. Is that correct? We are not talking about additional costs.

Dr. MERRIFIELD. That is right.

Senator DOLE. And I understand that the U.S. lead in biotechnology is an example of the kind of benefit that can be derived from cooperation among Government, universities, and industry?

Dr. MERRIFIELD. That is a spectacular example. The Federal collaborative efforts with universities and industries have created a whole new technology where we really do have the leadership at the present time. It is a very, very good example.

Senator DOLE. What did you indicate we were spending in Federal R&D dollars per year?

Dr. MERRIFIELD. Probably about $45 billion this year.

Senator DOLE. Does this count all the benefits through the Tax Code, direct and indirect, or just direct benefits?

Dr. MERRIFIELD. I do not know.

Senator DOLE. Well, you can furnish that for the record, but it is a rather significant sum.

Dr. MERRIFIELD. Yes.

[Dr. Merrifield subsequently submitted the following information for the record:]

The chart below contains information requested by Senator Dole on Federal spending on basic research. The chart also illustrates total expenditures for basic research by the private sector by way of comparison.

[In millions of dollars]

	1980	1981	1982	1983	1984
Basic research spending, United States	8,089	9,217	9,886	10,610	11,850
Federal	5,559	6,236	6,588	6,970	7,775
Private	2,530	2,981	3,298	3,640	4,075

Source: "National Patterns of Science and Technology Resources, 1984," National Science Foundation (in press).

Senator DOLE. I am not in total disagreement with Senator Metzenbaum. I think we should be cautious, but maybe it is about time we tried a new idea. I do not know why Senator Metzenbaum would be for it. It is something that Gary Hart might have thought of. [Laughter.]

But in any event, the statistics you have presented make it obvious the old ideas have not worked. It would seem to me that this bill might be very helpful to the Federal Government in the long run. So we are going to pursue it, and we will have a spirited debate, and when we finish the subcommittee hearings, we hope to go to the full committee. And obviously, if there are more safeguards, we should carefully consider them. Have you examined this bill? Do you think it protects legitimate Government interests in this area?

Dr. MERRIFIELD. Yes, indeed, and if a company that has the rights to technology fails to utilize it, then the recapture rights are there, and the ability to auction it off downstream. But, given the fact, as Norm was pointing out, that the ownership goes to those people who have been developing it, the incentive and the up-to-speed understanding of the technology and the potential also is there, that is a powerful incentive, and without that, it is unlikely that others would be that motivated to pick it up.

There is always an "NIH" factor, a "not invented here" factor, involved in transferring technology, and it is critical that the people who have been involved in it, who have the motivation, be allowed to have access to it to commercialize it.

Senator DOLE. It seems to me if you followed Senator Metzenbaum's line of thought, there might not be much interest. Why should someone go out and invent something and then say, "I have it all figured out, but I want to go out there and compete with somebody else to be able to commercialize it." There might be some tax motivation, or the person might be able to bid more, or whatever. There may be some way to persuade Senator Metzenbaum or satisfy his concerns. If not, we just have to have more votes than he has. But if they are real concerns, they should be addressed. Dr. Merrifield, do you have any reservations about S. 2171?

Dr. MERRIFIELD. I have none. I think it is an excellent piece of legislation, and I think it would provide a multiplier factor that would be very much in the national interest if we could get it passed.

Senator DOLE. Well, I am going to ask that that be made a part of the record, along with your prepared statement, and that we might move on to the other witnesses. I assume we are going to be working with you on a daily basis as we try to determine if, in fact, there are legitimate questions raised. There may be others raised with other witnesses, and they should also be addressed.

This is an important piece of legislation. This is not something that we are just filling up space with today. It is something we have been trying to get to for several weeks and months.

We appreciate your assistance, and we hope that we can persuade a good majority of Senators on both sides that we ought to move the bill this year.

Dr. MERRIFIELD. I would be happy to help you in any way.

Senator DOLE. Thank you very much, and your entire statement will be made a part of the record.

[The prepared statement of Dr. Merrifield and his responses to written questions of Senator Dole follow:]

PREPARED STATEMENT OF D. BRUCE MERRIFIELD

The economic growth and prosperity of our Nation depend heavily on the extent to which we remain in the forefront of the development and application of new technologies. Industry, not government, will make most of the decisions allowing this to happen. Nonetheless, it is vitally important that government removes any barriers to such decisions and fosters a climate encouraging the development of new technologies. This Administration is committed to reducing such barriers and providing the appropriate incentives.

Government patent policy is one of the areas in need of reform. The Federal Government funds a substantial portion of the total R&D performed in the United States. It is important that the terms and conditions imposed upon the contractors and grantees that perform this research are structured so as to encourage commercialization of new ideas and technologies that result from such work. We must foster an atmosphere in which industry will have the necessary incentives to make the financial investment which move new ideas into the marketplace.

Unfortunately, for many years, government patent policies have, in all too many cases, acted as a barrier to such investment. The reasons for this can be traced to both Congressional actions and those of the Executive Branch. In recent years, however, both the Congress and the Executive Branch have taken action to remedy long-standing inadequacies in patent policy. The passage of the "Bayh-Dole" Act 35 U.S.C Sec 200, which grants small businesses and universities ownership to inventions made with Federal support, was a major breakthrough. In the opinion of many university administrators with whom we have talked, "Bayh-Dole" is already paying dividends. Additionally, President Reagan, last year, substantially revised

37-360 O—84——5

the patent policies of the Executive Branch by issuing a new Memorandum and Statement of Government Patent Policy. This policy statement extends the principles of "Bayh-Dole" to performers other than small businesses and universities. Still, a number of statutes remain on the books hindering across-the-board application of the President's Statement.

Consequently, the Administration supports the intent of S. 2171. We believe S. 2171 establishes a sound basic policy, provides flexibility to cover unusual situations, and creates a sound institutional framework for the implementation and monitoring of the statute. It also makes a number of amendments to "Bayh-Dole" which experience during its implementation and operation have indicated should be made. We do have reservations about provisions of S. 2171 relating to transfer of rights under existing contracts and we will, of course, be happy to work with the subcommittee to cure this problem.

S. 2171 generally brings patent policy up-to-date. For many years government patent policy was dominated by the proposition that the government should normally own inventions made with its support. Though there were exceptions, particularly in the military agencies, this concept tended to shape the thinking of civilian agencies, and even some parts of the military R&D effort.

The origins of this concept can be found in a Report prepared by the Attorney General back in 1947. That report supports the concept of government ownership on the theory that permitting contractors to own inventions would increase concentration in American Industry. Thirty-five years of debate have not yet resolved whether ownership of patent rights leads to concentration of industries. More importantly, we should recognize that the older patent policies were framed in a now bygone era. In 1947 and for several decades thereafter government patent policy was being formulated against an

economic background in which the United States was the world's technological leader.

But today, the picture is different. Three fundamental forces of change are having profound effects on the world economy and the importance of technology in international competition. These forces are:

(1) The technology explosion that has generated something like 90 percent of everything we know in the sciences in the last 30 years, and which will double our technical knowledge base again in the next ten or fifteen years.

(2) The increasing propensity of governments to promote their domestic high technology industries, and

(3) The emergence of the lesser developed countries as the makers, sellers, and exporters of manufactured goods, including increasingly sophisticated products.

One effect of these forces is that the United States really has two industrial bases. One is composed of our older more mature industries. The other is composed of our rapidly growing high technology industries. New businesses are making up for the decline in older businesses. While older industries will not disappear, we must obviously establish government policies, including patent policies, that encourage new businesses based on new technologies. The approach of S. 2171 will help both new and older industries.

How does government patent policy and S. 2171 fit into this picture? As noted earlier, the government is a major source of funding for research and development. Out of the billions that are spent by the government, it is obvious that many new ideas and inventions will emerge. But very few will be funded by the government to the stage where they can be readily brought into the commercial market. It will require private initiative, and much investment, to transfer these ideas from the laboratories to the market. Similarly, it will also take private engineering and

marketing efforts to transform even more fully developed items, such as a state-of-the-art components for a military or space program, into a commercial item. Patent policy can either encourage or discourage this, depending on how it is structured.

S. 2171 will establish a more favorable policy to encourage commercialization of these inventions. It will normally allow the inventing organization the opportunity to retain ownership of the invention, thus allowing it to take advantage of the incentives of the patent system and the flexibility to dispose of resulting inventions in cooperative R&D arrangements with other organizations. At the same time, it provides the government with march-in rights which allow others to work the invention if the Contractor fails to do so.

We think an additional march-in right should be included that would give the government the ability to protect against retentions of title to patents where the retention has substantially anti-competitive effect. Although it is extremely important to put new technologies in the hands of the private sector to ensure that our economy will receive their full benefit, it is equally important to ensure that the retention of title does not work to harm or even destroy competition.

The wisdom of this approach becomes even more apparent when one examines the alternatives. The first would be the old policy of government ownership followed by licensing of all applicants. It is axiomatic that in most cases private enterprise will not invest in technologies it cannot control. This is not to say it will never happen. In rare cases the potential applications and size of market may be such that it would pay to invest even without an exclusive position. But, frankly, such clear opportunities are quite rare. It would be poor public policy to jeopardize the development of inventions and technologies because of situations that are rare.

It should also be recognized that a policy of government

ownership, followed by licensing of all applicants, may be especially favorable to foreign competitors to the extent that they benefit from protection by their governments from competition at home. A secured home market may give foreign firms sufficient incentive to develop a U. S. funded technology even without exclusive rights. Products may then, in some cases, be exported back to the U. S.

The second traditional patent policy alternative has been to defer patent ownership determinations. This often has superficial appeal. It says wait for the invention to be made, and then have the government decide whether the government or the contractor should take title. The basic fallacy with this approach is that it assumes the government can actually make a valid determination based on objective criteria, as to whether exclusive, patent sector rights will be needed to encourage further development. In fact, perhaps the only way to do this would be to assign a horde of scientists, engineers, economists, and other specialists to research the problem, and you would need different specialists for different situations. And even then, there would be so many unknowns as to make the whole process more a matter of guesswork and politics than science. It is much more preferable, economical, and timely to start with the presumption of S. 2171 that contractor ownership will maximize incentives. And, if, in fact, a potential competitor emerges that finds itself blocked by the contractor's patent, it can then go to the government and persuade it to use its march-in rights if the contractor is not working or allowing others to work the invention.

I have until now focused primarily on the impact of government patent policy on the technological vitality and growth of the overall economy. In developing a sound patent policy consideration should also be given to the following matters:

First, a sound patent policy should encourage the largest number and most qualified concerns to compete for Government R&D.

This will help ensure that the government will get the most effective research for its money and lower government costs. A policy which normally allows contractors to retain ownership of inventions is most likely to foster such competition. In effect, what the government has been doing is paying a premium contract price reflecting its purchase of the technology to be developed under the contract. Because the government has rarely developed this technology into commercial products or resold it, the government has generally not recovered the extra purchase price. Under the approach of S. 2171, the government will let the contractor retain rights to technology and, therefore, should not need to pay the premium to buy the technology. Because a deferred determination will cause uncertainty, the government may not receive the benefit of a lower contract price.

Second, of course, the government should be able to make use of any inventions for its own internal needs on a royalty-free basis. S. 2171 provides that the government will receive a royalty-free license unless the agency waives it rights under certain circumstances. Thus, there is no meaningful difference between it and a deferred or title-in-the-Government policy on this count. Indeed, the government may use any invention, under the concept of eminent domain whether or not government supported, and under 28 U.S.C. 1498 need only pay "reasonable compensation" if the use is not under license to the government. The license provided to the government in S. 2171 would negate any requirement to pay royalties or "reasonable compensation" to the government for government funded inventions.

Last, it is important that government funded R&D performers have sufficient rights in resulting inventions to enable them to enter into collaborative R&D arrangements with other research performers. If they cannot make appropriate arrangements for disposition of resulting inventions; they could be foreclosed from participation in many desirable cooperative R&D ventures.

Cooperative R&D ventures are starting up across the nation. S. 2171 clearly responds to these initiatives by enabling government funded performers to participate.

Thank you, I will be happy to respond to questions.

Responses From D. Bruce Merrifield to Written Questions Submitted by Senator Dole

1. IN VIEW OF THE FACT THAT THERE HAVE BEEN SO MANY PROBLEMS IMPLEMENTING THE CURRENT LAW AS CONGRESS INTENDED AND THE SERIOUS PROBLEMS IN FAR, HOW CAN WE ENSURE THAT THE PROVISIONS OF S.2171 ARE IMPLEMENTED AS CONGRESS INTENDS?

- The current law was the first real outside intrusion into the operations of agency patent staffs. It took a while for the message to get through that Congress and the Administration were serious about its implementation.

- The recent FAR situation was an example, of where a few patent attorneys felt they were the sole developers and interpreters of patent policy. I think they now understand that other interests must also be accommodated.

WILL HAVING COMMERCE DRAFT THE IMPLEMENTING REGULATIONS BE ENOUGH?

- Yes. The requirements for a rulemaking process to be open and the draft be made available for public and agency comment will ensure that we will be able to identify the issues and work out reasonable solutions. Past problems such as the FAR incident occured when there was not an open process.

2. HOW DOES LEGISLATION LIKE S.2171 FIT INTO YOUR EFFORTS TO RESPOND TO INTERNATIONAL ECONOMIC COMPETITION?

WHAT DO YOU THINK ABOUT VOLUNTARY ECONOMIC COMPETITION SUCH AS THAT SUPPORTED BY THIS BILL VERSUS CENTRALIZED ECONOMIC PLANNING TO RESPOND TO THE JAPANESE TARGETING CERTAIN INDUSTRIES?

- New technologies, either in products or processes are at the root of much international economic competition. With the Federal Government funding or performing about half of all the R&D in the nation, we just have to make the best economic use of the results as we can. About 2/3 of the Government funded research is done by contractors. S.2171 is a key part of a series of actions that we hope Congress will take to streamline the process getting the results of Government research into the economy.

- Centralized economic planning is not the answer for this country. Our strength comes from allowing people to see opportunities and act on what they see. The role of Government should be to maintain a climate where individuals can follow their imaginations and achieve what Government could never anticipate.

HAS THE DEPARTMENT HEARD FROM THE JAPANESE REGARDING THIS LEGISLATION?

- Yes. An article in a recent issue of the Japan Economic Journal discussed this country's administrative and legislative moves to allow large and intermediate size firms to own inventions rather than allowing the inventions to be generally available to all, including the Japanese. Quote follows:

> "Japanese enterprises have so far been in the same position as U.S. big enterprises; they have been able to obtain the right to use the patent by paying money for it. However, the fear will become stronger that if big enterprises are vested with the right of exclusive use, then it may become impossible for Japanese enterprises to obtain the right to use it, even if they pay money for it."

IS THE U.S. LEAD IN BIOTECHNOLOGY AN EXAMPLE OF WHAT CAN COME FROM COOPERATION BETWEEN GOVERNMENT, UNIVERSITIES, AND INDUSTRIES?

- Yes, it is an outstanding example. Much of the early research was done in universities under Federal funding. Since the universities were allowed to own the patents, they were in a position to negotiate with industry on follow-on development without Federal involvement. The contrast in the rate of development between bio-tech and other fields where the Government owns the patents is striking.

3. CAN WE ENSURE THAT FEDERALLY FUNDED R&D IS COMMERCIALIZED, PROTECT THE LEGILTIMATE NEEDS OF THE AGENCIES, MAINTAIN THE NEEDED FLEXIBILITY REQUIRED FOR SUCCESSFUL INNOVATION, AND STILL HAVE GOVERNMENT-WIDE UNIFORMITY.

- Yes. The open rule-making process that Commerce will be required to follow in developing implementing regulations will ensure that the various requirements are identified and provided for.

- Most of the needs of innovators are met by assuring them of clear title to patented inventions. With this, they can arrange for funding and make other commitments necessary for commercialization. The primary need of the Government is for a license to use an invention, and this is provided in the bill. And the needs of all agencies are prettly much the same. The differences stem from viewpoints on <u>how</u> to meet their needs, and these differences have never been analyzed.

- In summary, this is precisely why Commerce should have the authority to draft the implementing regulations.

5. WILL PASSAGE OF THIS LEGISLATION REQUIRE ANY ADDITIONAL FEDERAL EXPENDITURES?

- No. It will probably reduce them, since the Government does not pay patent costs for contractor owned inventions. Also, Federal R&D contracts should be more appealing to business since the contractor may expect to retain valuable rights, a factor that could reduce R&D costs. Finally, new business produced with new technologies can lead to increased tax revenues. So it is a good deal for the Government all around.

ARE YOU SATISFIED THAT THE PUBLIC IS RECEIVING THE MAXIMUM BENEFIT FROM THE BILLLIONS OF DOLLARS BEING SPENT YEAR IN AND YEAR OUT FOR FEDERAL R&D?

- Absolutely not. Twenty plus thousand Federal patents with less than a 4% licenseing rate says that the public is not receiving anything like the maximium benefit from R&D expenditures. S.2171 should lead to a major improvement.

4. WHAT ECONOMIC ADVANTAGES DO YOU SEE RESULTING FROM THE GOVERNMENT-INDUSTRY-UNIVERSITY-LABORATORY-STATE GOVERNMENT COLLABORATION ENVISIONED IN S.2171? IS FLEXIBILITY IMPORTANT FOR THIS INTERACTION TO OCCUR?

- When it comes to the really new technologies, it is much as Jimmy Durante used to say, "Everybody's got'a get into th' act!" Each of the parties you mentioned may have a part to play. Technologies that are originated by universities or Government labs can only be translated into products by industry. States are increasingly interested in promoting high-technology centers. The day of the garage inventor using basic mechanics to produce something like the automobile or aviation industry has passed. S.2171 allows inventing organizations to own the resulting patents. With this assurance, they can negotiate arrangements with other necessry parties and proceed.

- The result of much research is valuable knowledge -- valuable that is so long as the right to use it is controlled. A patent is to do just this. But very few Government-owned patents are used by the private sector. Where the original Dole Bill is at work, the record of commercialization is far better. And university invention ownership has led directly to much greater industry-university collaboration.

- As to flexibility, there is no standard idea, product, or development process. While they may have similarities, they are all unique and must be managed individually. The flexibility requirement is so that those who know an idea and its potential best, can negotiate an acceptable arrangement with others who must be involved.

Responses From D. Bruce Merrifield

to Written Questions Submitted by Senator McC. Mathias

1. IN YOUR TESTIMONY YOU STATE THAT THE PASSAGE OF THIS BILL WOULD ENCOURAGE A LARGER NUMBER OF COMPANIES TO COMPETE FOR GOVERNMENT R&D CONTRACTS. DO YOU HAVE ANY EVIDENCE THAT THE GOVERNMENT IS HAVING TROUBLE FINDING QUALIFIED PERSONS/COMPANIES TO PERFORM RESEARCH AND DEVELOPMENT WORK?

We have no evidence that the Government ever has had a problem finding persons/companies willing to undertake R&D at Government expense. However, whether, as I suggested in my testimony, the Government is attracting the best qualified persons/companies to undertake and complete the R&D involved is open to question. The 3M Company, one of the country's most successful innovators, addressed the limited involvement of high

technology companies in Federal R&D at the March 27th hearings. The principal problem, as stated by 3M, is:

> ".... many companies are reluctant to take on Federally-funded R&D contracts because they will tie up the company's primary or best qualified, productive research and development employees and equipment on work that will not generate profitable products protected by company-owned patents." (emphasis added)

My testimony reflects similar comments from many other high technology companies. Such statements also led the Department of Defense to adopt a contractor ownership policy years ago.

2. DOE AND NASA, TWO OF THE LARGEST GRANTORS, GIVE THE LION'S SHARE OF THEIR CONTRACTS TO LARGE COMPANIES SUCH AS WESTINGHOUSE ELECTRIC CORP., McDONNEL DOUGLAS, UNITED TECHNOLOGIES CORP., AND MARTIN MARIETTA CORP. THESE COMPANIES ALREADY ENJOY A COMPETITIVE EDGE IN SECURING GOVERNMENT CONTRACTS SINCE THEY CAN OFFER FACILITIES AND EXPERTISE A SMALLER COMPANY MAY NOT BE ABLE TO OFFER. IF WE GIVE THE INDUSTRY GIANTS EXCLUSIVE TITLE TO INVENTIONS THEY DEVELOP WITH GOVERNMENT FUNDS, WILL THEY ACQUIRE A COMPETITIVE ADVANTAGE OVER SMALLER COMPANIES AND WILL COMPETITION BE REDUCED?

S. 2171 is directed not only to large companies but also to the hundreds of high technology companies who are or may become Federally-funded contractors and who now are in the medium size range between large and small companies and are not covered by P. L. 96-517.

The Administration believes that contractor ownership will act as an incentive to the development and commercial use of Federally-funded inventions no matter what the size or class of contractor. Given this, denying ownership to any group of contractors will likely result in fewer Government funded inventions reaching the marketplace. The only exceptions to the general rule of contractor ownership that we believe are justified are those addressed in S. 2171.

Further, rather than decreasing competition, I envision that S. 2171 will increase competition for Federal R&D contracts by replacing older technologies with those developed through the incentive of contractor ownership. Commercialization of these new technologies will also enhance the competitive status of the U. S. in the world marketplace.

I would also add that the competitive edge referred to in the question (to the extent it exists) is, in most part, tested in the competition for each Federal contract. In some cases the large size of a project requires the capabilities of a major firm. If a large company prevails in any contest for an award over other companies, the award must be presumed to have been gained fairly. Further, S. 2171 does not relieve a company that acquires an unfair market dominance through ownership of a Federally-funded invention from the anti-trust laws.

3. YOU MENTION IN YOUR TESTIMONY THAT IT WOULD BE UNWISE TO WAIT UNTIL AN INVENTION IS MADE BEFORE MAKING A DECISION AS TO WHO SHOULD RETAIN TITLE. YOU EMPHASIZE THAT IT IS DIFFICULT FOR THE GOVERNMENT TO DETERMINE AT THAT POINT WHETHER THEIR RIGHTS SHOULD BE WAIVED. IF IT IS DIFFICULT FOR THE GOVERNMENT TO MAKE THAT DECISION AFTER THE INVENTION IS MADE, ISN'T IT FAR MORE DIFFICULT FOR THEM TO MAKE THIS DECISION BEFORE THE INVENTION IS MADE AND WITHIN 30 DAYS AFTER THE AWARDING OF A CONTRACT AS THIS BILL PROPOSES?

My testimony rejects the concept of Government determination of ownership, whether at the time of contracting or after the invention is identified, in favor of a presumption of contractor ownership which has been shown to be the most effective way of commercializing Federally funded inventions. The Administration's support for a presumption of contractor ownership is based in part on a long history of the Government's difficulty in developing a process or criteria to determine in any reasonably objective or timely fashion whether exclusive patent rights will be needed to encourage further development of the inventive results of Federally-funded R&D contracts. This failure was indicated by nearly all the testimony given at the March 27th hearing.

4. UNDER S. 2171 GOVERNMENT AGENCIES MUST DECIDE WITHIN THIRTY DAYS AFTER A CONTRACT IS AWARDED WHETHER TO GIVE A CONTRACTOR EXCLUSIVE RIGHTS IN INVENTIONS THEY DEVELOP UNDER THE CONTRACT. IF THE GOVERNMENT FAILS TO FORSEE THAT EXCLUSIVE TITLE SHOULD NOT BE GRANTED BECAUSE OF INTELLIGENCE, COUNTERINTELLIGENCE, NATIONAL SECURITY OR OTHER IMPORTANT GOVERNMENT INTERESTS, CAN THE GOVERNMENT DENY EXCLUSIVE TITLE AFTER THE INVENTION IS CREATED?.

No, the Government cannot deny exclusive title. However, the march-in provisions of Sec 216 are intended to address important government interests other than intelligence, counterintelligence or national security that might emerge after an invention is made.

Further, it is important to note that S. 2171 does not change the laws on classified inventions. Since the bill does not change such laws, the fact that S. 2171 may result in contractor ownership of a Federally-funded invention is not relevant to the invention's classification status. Clearly, a contractor is not excused from the operation of the classification laws by S. 2171. Further, contractors obtaining rights under S. 2171 will still be responsible for obtaining appropriate export licenses for sensitive but unclassified products or technology under the current export control laws. The many years of DOD experience demonstrates that contractor ownership as provided in S. 2171 is compatible with national security.

5. IT HAS BEEN ESTIMATED THAT ONLY FOUR PERCENT OF THE GOVERNMENT HELD PATENTS ARE LICENSED TO PRIVATE CONCERNS. THIS FOUR PERCENT FIGURE IS DRAWN FROM A 1976 STUDY ENTITLED "REPORT ON GOVERNMENT POLICY"

The four percent figure comes from dividing the number of licensed patents outstanding by the number of domestic patents held by the agencies as of the end of 1976. The actual calculation is 1,252 licensed inventions divided by the total portfolio of 28,021 inventions equals 4.47 percent. Since only 21 of these licenses were exclusive, there is reason to believe that only a small percentage of the 1,252 were actually used commercially.

A. DO YOU HAVE A MORE RECENT FIGURE?

There has not been a comprehensive collection of invention, patent, and utilization data since the 1976 Report. However, some pieces of the picture are available.

- The Patent Office reports of patents issued can be used to develop data on patents awarded to agencies.

- Senator Schmitt asked a number of agencies for data to use in drafting a bill that was a precursor of

S.2171. The agency responses give some indication of licensing activity.

By compiling data from these two sources and from data supplied by DOE, it appears that the agencies received 2613 patents in 1980-81. These agencies issued 290 licenses, of which only 17 were exclusive. This indicates an invention licensing rate of between 0.7 and 11.1 percent. We do not have figures indicating how many different inventions are involved in the 273 nonexclusive licenses so we cannot be certain of the licensing rate. It must, however, involve at least 18 inventions (in which case the rate would be 0.7 percent) and less than 290 inventions (in which case the rate would be 11.1 percent). In addition, NTIS licensed 17 patents raising the Government rate to somewhere between 0.7 and 11.7 percent for these two years.

B. WHAT EFFECT DO YOU THINK THE ESTABLISHMENT IN 1976 OF THE NATIONAL TECHNICAL INFORMATION SERVICE'S LICENSING PROGRAM HAD ON THIS FIGURE?

The program has probably caused more inventions to be licensed than would have happened if NTIS had not been established.

C. IF WE WERE TO BREAK THIS 4% FIGURE DOWN INTO LICENSING RATES FOR DEFENSE VERSUS CIVILIAN AGENCIES, WHAT WOULD BE THE RESULTING LICENSING RATE FOR CIVILIAN AGENCIES ALONE?

Treating the Departments of Agriculture, Commerce, Interior, Health and Human Services, plus the Veterans Administration--those departments for which statistics are available--as the civilian agencies, their licensing rate for the 1959-76 period was about 10 percent. In 1983, these agencies filed about 125 patent applications and NTIS issued 25 first-time licenses for these agencies. This roughly indicates a 20 percent patent licensing rate. (We have no agency licensing data for 1983).

D. HOW DOES THIS FIGURE COMPARE WITH THE GENERAL LICENSING RATE FOR PRIVATE INDUSTRY?

There is no comparable rate for private industry. In most cases, businesses obtain patents to protect their products, not to license other firms. A majority of business licenses are probably the result of inter-firm cross licensing agreements rather than the simple purchasing of rights to use a specific invention as is usually the case with Government inventions.

The major research universities, we are told, typically are licensing 35 to 45 percent of their inventions since P. L. 96-517 allowed them to own inventions resulting from Government funded research. A 1982 study of university ownership of inventions developed under National Institutes of Health funding found that of 595 university owned patents, 360 were licensed for a rate of 60.5 percent. It should be noted that the combined HHS/NTIS licensing rate for 93 NIH employee inventions was 59.1 percent, or just about the same as the universities for this class of technology. In both cases, the university and NTIS licensing activities have direct, organizational access to the respective inventors.

E. WHAT IS THE LICENSING RATE FOR DEFENSE AGENCIES ALONE? IS THIS FIGURE LIKELY TO CHANGE UNDER S.2171?

In 1980-81, the DOD agencies obtained 1432 patents and licensed two of them for a 0.14 percent licensing rate. NTIS

licensed two more and doubled the rate to 0.28 percent. DOD has had a policy for many years giving contractors' a right of first refusal to ownership of inventions made under DOD contracts and filing patents primarily for defensive purposes. The patents it does file come from those made by its own employees or those rejected by contractors. Since S.2171 will not have any effect on these classes of inventions, it is not expected to change the DOD licensing rate.

F. DOES DOD ALREADY GRANT LICENSES TO THE FULLEST EXTENT POSSIBLE GIVEN NATIONAL SECURITY CONSIDERATIONS? WILL THESE NATIONAL SECURITY CONSIDERATIONS BE GIVEN ANY LESS PROTECTION UNDER S.2171 THAN THEY ARE CURRENTLY GIVEN?

S.2171 will provide explicit statutory authority for the contractor ownership policy DOD has followed for years. The laws and procedures for protecting classified information apply to any classified invention, regardless of who owns it. Thousands of defense contractors routinely work with classified inventions today and S.2171 will have no effect on this. We believe, however, that DOD could do more to license commercially useful inventions (primarily from its own employees) that are not classified. We are working with DOD to help increase its licensing rate.

G. IF THE DIFFERENCE BETWEEN THE LICENSING RATE FOR CIVILIAN AGENCIES AND PRIVATE INDUSTRY IS SMALL, WOULD THIS SUGGEST THAT GOVERNMENT FUNDED INVENTIONS WITH COMMERCIAL VALUE ARE BEING LICENSED AND EXPLOITED IN COMMERCIAL MARKETS NOW?

Government licensing rates properly can be compared only with those of universities and other nonprofit organizations that do not manufacture or sell products. But this is not related to the primary purpose of S.2171. By allowing all classes of contractors to own Government funded inventions, S. 2171 is expected to lead to more commercial use of inventions by the organizations that create them. Only in the case of the nonprofit contract operators of Government-owned laboratories is this expected to come significantly through increased patent licensing.

Responses From D. Bruce Merrifield

to Written Questions Submitted by Senator Metzenbaum

1. You testify that this bill will encourage private use of inventions developed with government funds. Aren't there better ways to achieve that goal? Why not have the government auction monopoly patent rights to the highest bidder in those cases where a monopoly is justified? Why do we have to give away these rights to all contractors to make sure these inventions are used?

Attached is a letter to Senator Dole that explains the Department of Commerce objections to auctioning patent rights.

2. This bill only allows government agencies to limit contractors' monopoly BEFORE they contract for the work and only in "exceptional circumstances." How will the

government know that exceptional circumstances exist before the invention is created?

The exceptional circumstances provision is but one of three provisions in the bill that allows a federal agency to include nonstandard contract provisions in a funding agreement. It is to provide for situations that might occur but which cannot be foreseen at the time of contracting. It could be used only when an agency determines that nonstandard contract provisions would better promote the policies and objectives of sections 200 and 212 of title 35, United States Code, as amended by S. 2171.

We do not expect the exceptional circumstances provision to be used often. This is because the government is neither in the business, nor has the capacity, to decide what is the best way to bring most inventions to the marketplace. A need to use the provision would be apparent from the unusual nature or economics of a research project at the time of contracting.

3. Under this bill, major inventions discovered with government money could be owned exclusively by a particular contractor. The government could not allow other companies to make use of inventions after their discovery. Doesn't this trouble you?

No, it doesn't trouble us for three reasons. First, section 216 provides that an agency may march in and require licensing of an invention under three sets of circumstances. These are identified in section 216(a)(1) and cover the situations that we can foresee where the government might have a legitimate reason to direct licensing.

Second, to require licensing of competitors on a broader basis than the circumstances of section 216(a)(1) would undercut the incentive of inventor ownership intended by the bill.

Third, and more important from a practical standpoint, the complex products on the market today would not be possible if companies did not routinely license others to use their inventions. Cooperation in licensing is a fundamental necessity of corporate existence that functions very well without government intervention.

4. This bill would allow the government to force contractors to license other companies to use inventions that the contractor had failed to use adequately. These are called "march-in rights." A similar provision was included in the law we passed for university and small business inventions. Has the govenrment ever exercised this right?

We know of no case where this was found to be necessary. Contractors are normally cooperative and agree to government requests for return of inventions that they have not commercialized after a reasonable time.

5. Isn't it true that the government does not have the resources to monitor whether contractors are adequately using these inventions?

We do not believe that resources are an issue. The best way for an agency to learn that a government-funded invention is not being used is through complaints from firms that want to use it. Such complaints would be investigated and, if valid, could be the basis for initiating a march-in proceeding if the contractor does not agree to license the invention.

6. I have been told that the Department of Energy provides not

only the funding, but also laboratories and managerial direction for its contracts. Does it trouble you that technologies developed with government funds, at government facilities, under government direction would be owned by private contractors under this bill?

No. The amount of funds, facilities and time the government has contributed to the making of an invention has not been a significant factor in determining the invention's ownership. The issue is who will best assure through its management that the invention will reach the marketplace. We strongly believe, and the evidence supports, that the originating contractor is the best advocate for an invention's ultimate use.

7. Do the government agencies have any trouble finding qualified people or corporations to conduct research and development that they fund? Do we need this legislation to make sure the work gets done?

We have no evidence that the government ever has had a problem finding persons/companies willing to undertake R&D at government expense. However, whether, as Assistant Secretary Merrifield suggested in his testimony, the government is attracting the best qualified persons/companies to undertake and complete the R&D involved is open to question. The 3M Company, one of the country's most successful innovators, addressed the limited involvement of high technology companies in federal R&D at the March 27th hearings. The principal problem, as stated by 3M, is:

> "... many companies are reluctant to take on Federally-funded R&D contracts because they will tie up the company's primary or best qualified, productive research and development employees and equipment on work that <u>will not generate profitable products protected by company-owned patents</u>." (emphasis added)

This testimony reflects similar comments from many other high technology companies. Such statements also led the Department of Defense to adopt a contractor ownership policy years ago.

GENERAL COUNSEL OF THE
U.S. DEPARTMENT OF COMMERCE,
Washington, DC, June 13, 1984.

Hon. ROBERT DOLE,
Chairman, Subcommittee on Courts,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: This is in response to your request for the comments of this Department regarding a proposal of Senator Metzenbaum concerning the auctioning of patents to inventions resulting from federally-funded research and development (R&D) contracts, which was raised during hearings on S. 2171.

THE UNIFORM PATENT PROCEDURES ACT OF 1983

The Department of Commerce opposes the concept of auctioning patents to inventions resulting from federally-supported R&D work. The idea is inconsistent with the efforts of this Administration and the approach of S. 2171 to extend ownership of federally-funded inventions to all contractors in order to encourage the commercialization of such inventions.

We believe that auctioning patents to inventions resulting from federally-supported R&D work could adversely affect the reporting of new ideas and the degree of private initiative and investment in developing those ideas. A system of auctioning patents would effectively separate the inventor from the development process. An inventor's technical understanding of an invention, ability to evaluate its commercial potential and interest in its future development are important to its successful commercialization. Inventors who have little opportunity to obtain a property interest in new ideas resulting from their research probably would have little incentive to report new ideas to the government or to work to develop them. We believe a system of auctioning patents would not facilitate the transfer of new technologies to the private sector but actually could hinder the government's efforts to commercialize them.

In addition to the above, we oppose the proposal to auction patents to these inventions for the following reasons.

Implementing the proposal to auction patents to federally-supported inventions would increase administrative burdens on the government. Inventions are basically ideas which need much additional work and funding when they are initially reported. If ownership of inventions were assigned to the government, contractors realistically would have little incentive to either evaluate the commercial potential of inventions or to file patent applications on those that were valuable. The government therefore would be burdened with evaluation and patenting functions, which would involve reviewing all contractor invention reports and selecting those that appeared most promising. These additional burdens could impede rather than facilitate the transfer of technology.

If contract operators of government-owned laboratories (GOCOs) were required to assign inventions to the government, the inventions could not be used as bases for cooperative development arrangements with private industry. Business must have incentives to collaborate in joint research projects with GOCOs. The most significant inducement is a preferential right to use the GOCOs' research results, which usually means patent ownership. Auctioning patents could therefore act as a disincentive to business in collaborating with GOCOs and in developing and commercializing new technologies.

This last point is particularly important. Among the most important inventions resulting from GOCOs are those from basic research. These inventions generally need additional costly development before they are ready to be marketed, and they often require both the continued participation of the inventors and the use of the laboratories' facilities. To require that an invention must be taken from a laboratory and a company found to undertake its development and to then have the company return to the laboratory for the necessary follow-up support would be inefficient and wasteful.

Finally, the federal government should work to develop and commercialize new technologies and should not concentrate on selling the patents to the highest bidders. S. 2171 would further the commercialization of new technologies, while we believe an auctioning system would hinder this goal.

There has been insufficient time to coordinate the views presented in this letter with the Office of Management and Budget and other concerned Executive agencies.

Accordingly, the views presented herein are solely those of the Department of Commerce.

Sincerely,

IRVING P. MARGULIES, *General Counsel.*

Senator DOLE. Next is a panel of Mr. Steve Holtzman, director, Thomas Edison Education Research Partnership, department of development, from Ohio—I wish Senator Metzenbaum had stayed—and Dr. John S. Toll, president of the University of Maryland, Adelphi, MD.

Again, I would hope that we might be able to summarize statements and hit the highlights.

Mr. Holtzman, please proceed.

STATEMENTS OF STEVEN H. HOLTZMAN, DIRECTOR, THOMAS EDISON EDUCATION RESEARCH PARTNERSHIP, DEPARTMENT OF DEVELOPMENT, COLUMBUS, OH, AND DR. JOHN S. TOLL, PRESIDENT, UNIVERSITY OF MARYLAND, ADELPHI, MD

Mr. HOLTZMAN. Mr. Chairman, Senators, and distinguished guests, it is a privilege to speak to the committee today on behalf of Gov. Richard F. Celeste of Ohio in support of Senate bill 2171, the Uniform Patent Procedures Act of 1983.

My name is Steven Holtzman, and I am director of Ohio's Industrial Technology and Enterprise Advisory Board, a bipartisan board charged with the administration of Ohio's Thomas Alva Edison Partnership Program.

I will briefly describe the Edison program, suggesting how it is consonant with and will be assisted by Senate bill 2171.

Senator DOLE. Are you reading from the summary, I hope?

Mr. HOLTZMAN. I am summarizing what I have given you, and detailed materials have been submitted.

Senator DOLE. OK. We will make all that a part of the record, then.

Mr. HOLTZMAN. OK.

Justice Louis D. Brandeis once remarked:

> It is one of the happy incidents of the Federal system that a single courageous State may serve as a laboratory and try novel social and economic experiments without risk to the rest of the country.

All of the States represented here—Maryland, Pennsylvania—are undertaking such experiments to accelerate the rate at which science and technological research are transferred to the economy in the form of marketable technological innovations. Ohio's contribution in this arena is the Thomas Alva Edison Partnership Program.

Funded at a level of $32.4 million for the 1983–85 biennium, the Edison Partnership Program actually consists of three distinct initiatives. The linchpin of all will be the creation of a successful partnership involving industry, the academic community, and State government.

Senate bill 2171 will facilitate the addition of the Federal Government to this partnership.

Our first initiative, the Search for Technology Program, is organizing an ongoing structure within Ohio's universities and colleges to identify, evaluate, and document the commercial potential of

their technological assets. This will accelerate the rate at which these technologies are transferred to the private sector.

Our second program, the Innovative Research Financing Program, provides matching capital for research and development projects that represent cooperative efforts involving an industrial cosponsor and researchers from Ohio's institutions of higher learning.

Through our third program, the Edison Advanced Technology Application Centers Program, Ohio is seeking to encourage the formation and growth of several major, world-class technology research, development and implementation centers. Each center will involve a consortium of academic and business interests that will focus on an emerging technology area based upon the consortium's existing research and development strengths and resources. Each center's R&D program, both with respect to its content and its mechanism for the transfer of innovative technological developments and expertise to the Ohio economy, must demonstrate the ability to stimulate the start up of new technology businesses and to help existing Ohio enterprises to become more competitive. A challenge grant competition is currently underway in Ohio, with four to six such centers to be selected this summer.

Conceptually, all of the Edison programs embody a certain vision of the role of the State in economic development through technological innovation—a vision which I believe equally informs Senate bill 2171. State funds are held out as an incentive to catalyze new and enhance existing, mutually beneficial cooperative relationships.

The State has adopted the position that it is those directly involved in technological innovation—that is, the individual academic researchers, working in conjunction with their technical counterparts in industry—who are best able to judge which research topics are ripe for investigation and are most likely to have industrial value. In other words, the State does not attempt to centrally plan or direct the market, but rather, listens to what the market tells us is an emerging technological field in which Ohio has a high growth potential.

Second, the State provides incentive capital to assist those cooperative research and development efforts, usually involving innovative small businesses, which would receive financing were it not for imperfections in our conventional capital markets. But even in this case, the State requires the provision of matching funds by the industrial cosponsor to insure a genuine market interest.

Senator DOLE. I am going to have to ask you to speed it up. Let's get down to the bottom line. I am interested in Ohio, since that is where Senator Metzenbaum is from—and all I really want to know is, if the Governor is for this program, will he call Senator Metzenbaum?

Mr. HOLTZMAN. Excuse me?

Senator DOLE. Does the Governor support this?

Mr. HOLTZMAN. Yes, he does.

Senator DOLE. OK. Well, let's move on, then. If you can get him to call Senator Metzenbaum, that will be a great contribution.

Mr. HOLTZMAN. I would point out, in defense of Senator Metzenbaum, that the second program mentioned, the Innovative Re-

search Financing Program, is a program under which we provide assistance, matching funds, in the form of a royalty bearing instrument, so that funds do come back to the State if there is successful commercialization of a product or process developed with State assistance. So his concept is embodied there, as well.

Senator DOLE. Right. And I do not quarrel with that. I just think if we are really serious about this legislation—obviously, you are, and I think the Governor is, and I am certain Senator Metzenbaum is, but he does have some reservations—it would be very helpful if you could work on those.

Mr. HOLTZMAN. OK.

[The following material was received for the record:]

Prepared Statement of Steven H. Holtzman

MR. CHAIRMAN, SENATORS, AND DISTINGUISHED GUESTS. IT IS A PRIVILEGE TO SPEAK TO THE COMMITTEE TODAY ON BEHALF OF GOVERNOR RICHARD F. CELESTE OF OHIO IN FAVOR OF SENATE BILL 2171: THE UNIFORM PATENT PROCEDURES ACT OF 1983. MY NAME IS STEVEN H. HOLTZMAN AND I AM DIRECTOR OF OHIO'S INDUSTRIAL TECHNOLOGY AND ENTERPRISE ADVISORY BOARD, A BI-PARTISAN BOARD CHARGED WITH ADVISING GOVERNOR CELESTE'S DEPARTMENT OF DEVELOPMENT ON THE ADMINISTRATION OF THE THOMAS ALVA EDISON PARTNERSHIP PROGRAM--THE CELESTE ADMINISTRATION'S PREMIER PROGRAM FOR ENCOURAGING ENHANCED UNIVERSITY/INDUSTRY COOPERATIVE RESEARCH AND DEVELOPMENT EFFORTS IN OHIO.

MY REMARKS IN SUPPORT OF SENATE BILL 2171 WILL BE TWOFOLD: FIRST, BY WAY OF A BRIEF DESCRIPTION OF OHIO'S THOMAS ALVA EDISON PARTNERSHIP PROGRAM, I HOPE TO DEMONSTRATE THE SHARED UNDERLYING PHILOSOPHY THAT INFORMS BOTH THE EDISON PROGRAM AND SENATE BILL 2171. SECOND, I HOPE TO INDICATE HOW SPECIFIC PROVISIONS OF SENATE BILL 2171 WILL CONTRIBUTE TO THE SUCCESS OF OUR EFFORTS IN OHIO.

TO THE FIRST MATTER, THEN, JUSTICE LOUIS D. BRANDEIS ONCE REMARKED THAT "IT IS ONE OF THE HAPPY INCIDENTS OF THE FEDERAL SYSTEM THAT A SINGLE COURAGEOUS STATE MAY . . . SERVE AS A LABORATORY AND TRY NOVEL SOCIAL AND ECONOMIC EXPERIMENTS WITHOUT RISK TO THE REST OF THE COUNTRY". ALL OF THE STATES REPRESENTED ON THIS PANEL BEFORE YOU TODAY HAVE UNDERTAKEN SUCH "EXPERIMENTS" TO ACCELERATE THE RATE AT WHICH SCIENCE AND TECHNOLOGICAL RESEARCH IS TRANSFERRED TO THE ECONOMY IN THE FORM OF MARKETABLE TECHNOLOGICAL INNOVATIONS. OHIO'S CONTRIBUTION IN THIS ARENA IS THE THOMAS ALVA EDISON PARTNERSHIP PROGRAM. FUNDED AT A LEVEL OF $32.4 MILLION FOR THE 1983-1985 BIENNIUM, THE EDISON PARTNERSHIP PROGRAM ACTUALLY CONSISTS OF THREE DISTINCT PROGRAMS, ALL OF WHICH AIM TO STIMULATE ECONOMIC DEVELOPMENT IN OHIO THROUGH TECHNOLOGICAL INNOVATION. THE LINCHPIN OF ALL THREE INITIATIVES IS THE CREATION OF A SUCCESSFUL PARTNERSHIP INVOLVING INDUSTRY, THE ACADEMIC COMMUNITY, AND STATE GOVERNMENT. THE THREE INITIATIVES ARE AS FOLLOWS. OUR SEARCH FOR TECHNOLOGY (SEARCH) PROGRAM WILL ORGANIZE AN ON-GOING STRUCTURE WITHIN OHIO'S UNIVERSITIES AND COLLEGES TO IDENTIFY, EVALUATE, AND DOCUMENT THE COMMERCIAL POTENTIAL OF THEIR TECHNOLOGICAL ASSETS. THE OBJECTIVE OF THE

PROGRAM IS TO ACCELERATE THE RATE AT WHICH THESE NEWLY RECOGNIZED TECHNOLOGIES ARE TRANSFERRED TO THE PRIVATE SECTOR FOR THE START-UP OF NEW BUSINESSES, OR AS ADDITIONS TO THE PRODUCT LINES OF ESTABLISHED FIRMS. OUR SECOND PROGRAM, THE INNOVATIVE RESEARCH FINANCING PROGRAM (IRFP), PROVIDES MATCHING CAPITAL TO SUPPORT JOINT UNIVERSITY/INDUSTRY RESEARCH AND DEVELOPMENT PROJECTS. FUNDED PROJECTS UNDER THIS PROGRAM MUST BE COOPERATIVE EFFORTS INVOLVING AN INDUSTRIAL CO-SPONSOR (WHO PROVIDES THE MATCHING CAPITAL) AND A RESEARCHER BASED IN AN OHIO INSTITUTION OF HIGHER LEARNING. UNDER THIS PROGRAM, THE STATE WILL CONSIDER TWO TYPES OF PROJECTS: CLASS 1: EARLY STAGE FEASIBILITY PROJECTS WITH FUNDING AVAILABLE IN THE FORM OF GRANTS IN AMOUNTS UP TO $50,000; AND CLASS 2: ADVANCED APPLIED RESEARCH PROJECTS WITH FUNDING AVAILABLE IN THE FORM OF A ROYALTY-BEARING INSTRUMENT IN AMOUNTS UP TO $250,000.

IF WE CAN THINK OF OHIO'S INNOVATIVE RESEARCH FINANCING PROGRAM AS PROJECT-ORIENTED, OUR THIRD PROGRAM REPRESENTS A LARGE SCALE INSTITUTIONAL EFFORT. UNDER THE EDISON ADVANCED TECHNOLOGY APPLICATION CENTERS (ATAC'S) PROGRAM, OHIO IS SEEKING TO ENCOURAGE THE FORMATION AND GROWTH OF SEVERAL MAJOR, WORLD-CLASS TECHNOLOGY RESEARCH, DEVELOPMENT, AND IMPLEMENTATION CENTERS. EACH CENTER WILL INVOLVE A CONSORTIUM OF ACADEMIC AND BUSINESS INTERESTS AND WILL FOCUS ON A TECHNOLOGY AREA BASED UPON THE CONSORTIUM'S EXISTING RESEARCH AND DEVELOPMENT STRENGTHS AND RESOURCES. EACH CENTER'S R&D PROGRAM, BOTH WITH RESPECT TO ITS CONTENT AND ITS MECHANISMS FOR THE TRANSFER OF INNOVATIVE TECHNOLOGICAL DEVELOPMENTS AND EXPERTISE TO OHIO INDUSTRY, MUST DEMONSTRATE THE ABILITY TO STIMULATE THE START-UP OF NEW TECHNOLOGY BUSINESSES, HELP EXISTING ENTERPRISES TO BECOME MORE COMPETITIVE, AND ACT AS A MAGNET TO ATTRACT NEW INVESTMENT IN TECHNOLOGICAL INNOVATION IN OHIO. A CHALLENGE GRANT COMPETITION IS CURRENTLY UNDERWAY IN OHIO AND 4-6 SUCH CENTERS ARE EXPECTED TO BE SELECTED AND FUNDED AT A LEVEL OF APPROXIMATELY $3-$4 MILLION EACH THIS SUMMER.

CONCEPTUALLY, ALL OF THE EDISON PROGRAMS EMBODY A CERTAIN VISION OF THE ROLE OF THE STATE IN ECONOMIC DEVELOPMENT THROUGH TECHNOLOGICAL INNOVATION--A VISION WHICH EQUALLY INFORMS SENATE BILL 2171. THE STATE OF OHIO HAS REFUSED TO ADOPT THE ROLE OF A CENTRAL PLANNING AGENCY. INSTEAD, STATE FUNDS ARE HELD OUT AS AN INCENTIVE TO CATALYZE NEW AND ENHANCE EXISTING MUTUALLY BENEFICIAL COOPERATIVE RELATIONSHIPS AMONG ACADEMIC, BUSINESS, AND GOVERNMENTAL RESOURCES

AIMED AT ECONOMIC GROWTH THROUGH THE DEVELOPMENT AND IMPLEMENTATION OF INNOVATIVE TECHNOLOGIES. THE STATE HAS ADOPTED THE POSITION THAT IT IS THOSE DIRECTLY INVOLVED IN TECHNOLOGICAL INNOVATION, THAT IS, THE INDIVIDUAL ACADEMIC RESEARCHERS WORKING IN CONJUNCTION WITH THEIR TECHNICAL COUNTERPARTS IN INDUSTRY, WHO ARE BEST ABLE TO JUDGE WHICH RESEARCH TOPICS ARE RIPE FOR INVESTIGATION AND ARE MOST LIKELY TO HAVE INDUSTRIAL VALUE. IN OTHER WORDS, THE STATE DOES NOT ATTEMPT TO DIRECT THE MARKET, BUT RATHER, FIRST AND FOREMOST, LISTENS TO WHAT THE MARKET TELLS US IS AN EMERGING TECHNOLOGICAL FIELD IN WHICH OHIO HAS A HIGH GROWTH POTENTIAL. SECONDLY, THE STATE PROVIDES INCENTIVE CAPITAL TO ASSIST THOSE COOPERATIVE RESEARCH AND DEVELOPMENT EFFORTS, USUALLY INVOLVING SMALL BUSINESSES, WHICH WOULD RECEIVE FINANCING WERE IT NOT FOR IMPERFECTIONS IN OUR CONVENTIONAL CAPITAL MARKETS THAT LEAD TO OVERLY RISK-AVERSE ATTITUDES. EVEN IN THIS CASE, HOWEVER, THE STATE REQUIRES THE PROVISION OF MATCHING FUNDS BY THE INDUSTRIAL CO-SPONSOR TO INSURE A GENUINE MARKET INTEREST.

SENATE BILL 2171 SHARES THIS VISION OF THE ROLE OF THE STATE. SENATE BILL 2171 DOES NOT STIPULATE SPECIFIC TECHNOLOGICAL AREAS IN WHICH BUSINESS AND THE GOVERNMENT SHOULD MAKE INVESTMENTS. RATHER, IT SEEKS TO REMOVE ARTIFICIAL BARRIERS WHICH CURRENTLY INHIBIT THE MARKETING OF NEW DISCOVERIES AND TECHNOLOGICAL INNOVATIONS DEVELOPED WITH GOVERNMENT ASSISTANCE. IN PARTICULAR, BY ALLOWING THE OWNERSHIP OF INVENTIONS ARISING FROM FEDERALLY SUPPORTED RESEARCH TO ACCRUE TO UNIVERSITY AND INDUSTRY PARTICIPANTS, IT EXTENDS AN INCENTIVE TO INDIVIDUAL RESEARCHERS AND GOVERNMENT LABORATORIES TO EXPLORE R&D PROJECTS WITH SIGNIFICANT COMMERCIAL POTENTIAL. THE GOVERNMENT'S SOLE INTEREST IN INTELLECTUAL PROPERTY DEVELOPED IN COLLARORATIVE EFFORTS WILL BE TO INSURE THAT THE DEVELOPMENTS ARE COMMERCIALIZED IN A MANNER CONSISTENT WITH AND CONDUCIVE TO THE COUNTRY'S ECONOMIC AND SECURITY INTERESTS. IN THIS REGARD, IT IS INTERESTING TO NOTE THAT IN OHIO'S ADVANCED TECHNOLOGY APPLICATION CENTERS PROGRAM, THE STATE HAS TAKEN THE POSITION THAT POLICIES FOR THE DISTRIBUTION OF INTELLECTUAL PROPERTY RIGHTS SHOULD BE WORKED OUT BETWEEN INDUSTRY AND ACADEMIC COLLABORATORS IN THE CENTER WITH THE STATE'S INTEREST BEING SOLELY IN AN ASSURANCE THAT OHIO WILL BENEFIT FROM SUCH DEVELOPMENTS. AGAIN, THE PARALLELS BETWEEN SENATE BILL 2171 AND THE POLICIES ADOPTED IN OHIO'S EFFORTS, ARE MANIFEST.

MY SECOND TOPIC IS A DESCRIPTION OF HOW THE PASSAGE OF SENATE BILL 2171 WILL CONTRIBUTE TO THE SUCCESS OF OHIO'S THOMAS ALVA EDISON PARTNERSHIP PROGRAM. AS I MENTIONED, OUR INNOVATIVE RESEARCH FINANCING PROGRAM (IRFP) REQUIRES A COLLABORATIVE EFFORT INVOLVING AN ACADEMIC-BASED RESEARCHER AND AN INDUSTRIAL CO-SPONSOR. IF SENATE BILL 2171 WERE TO PASS, IT ARGUABLY WOULD BE IN OHIO'S BEST INTEREST TO AMEND THE EDISON LEGISLATION TO ALLOW ONE OF THE COLLABORATORS TO BE A RESEARCHER BASED AT ONE OF OHIO'S FEDERAL LABORATORY INSTALLATIONS. THE POOL OF TALENT REPRESENTED AT, FOR EXAMPLE, THE NASA LEWIS RESEARCH CENTER IN CLEVELAND AND WRIGHT PATTERSON AIR FORCE BASE IN DAYTON, COULD CONTRIBUTE IMMEASURABLY TO OHIO'S ECONOMIC DEVELOPMENT EFFORTS IF ARTIFICIAL BARRIERS TO THEIR PARTICIPATION WERE REMOVED.

IN A SIMILAR MANNER, UNDER OHIO'S EDISON ADVANCED TECHNOLOGY APPLICATION CENTERS PROGRAM, THE PRIMARY PARTICIPANTS IN THESE LARGE SCALE RESEARCH AND DEVELOPMENT CONSORTIA ARE ENVISAGED TO BE ACADEMIC INSTITUTIONS AND INDUSTRIES. THE PASSAGE OF SENATE BILL 2171 WOULD FACILITATE THE ABILITY OF OHIO'S FEDERAL RESEARCH AND DEVELOPMENT INSTALLATIONS TO PARTICIPATE AS A MAJOR THIRD PLAYER IN THESE COOPERATIVE EFFORTS. ADVANCED TECHNOLOGICAL DEVELOPMENTS IN SUCH AREAS AS MATERIALS SCIENCE, ADVANCED MANUFACTURING, AND ARTIFICIAL INTELLIGENCE ARE JUST SOME EXAMPLES OF EXISTING STRENGTHS TO BE FOUND IN OHIO'S INDUSTRIAL AND ACADEMIC COMMUNITIES, AS WELL AS AT THE NASA LEWIS RESEARCH CENTER AND WRIGHT PATTERSON AIR FORCE BASE.

"DEVELOPMENT THROUGH TECHNOLOGICAL INNOVATION" DENOTES A MAJOR ELEMENT IN GOVERNOR CELESTE'S OVERALL STRATEGY FOR THE ECONOMIC REVITALIZATION OF OHIO. IT REPRESENTS THE REJECTION OF WHAT HAS BECOME A FASHIONABLE DICHOTOMY IN ECONOMIC DEVELOPMENT CIRCLES: NAMELY, THAT WE EITHER PROP UP DYING SUNSET INDUSTRIES OR SUPPORT SUNRISE INDUSTRIES. THE THOMAS ALVA EDISON PARTNERSHIP PROGRAM SEEKS TO CREATE THE PRE-CONDITIONS FOR TECHNOLOGICAL INNOVATION TO EXPAND AND FLOURISH IN ALL SECTORS OF THE OHIO ECONOMY. THE PASSAGE OF SENATE BILL 2171 WILL PROVIDE THE NECESSARY INCENTIVES TO ALLOW OHIO'S FEDERAL RESEARCH AND DEVELOPMENT INSTALLATIONS TO PARTICIPATE IN OUR "NOBLE EXPERIMENT". WE URGE THE COMMITTEE TO PROVIDE ITS UNANIMOUS BI-PARTISAN SUPPORT OF THIS MOST WORTHY MEASURE.

THANK YOU.

STATE OF OHIO
Richard F. Celeste, Governor
Alfred S. Dietzel, Director

Department of Development

P.O. Box 1001 • Columbus, Ohio • 43216

Thomas Alva Edison Partnership Program

The Thomas Alva Edison Partnership Program was created to encourage State economic development through technological innovation. The $32.4 million Edison Program will provide matching funding to foster cooperative research and development efforts involving businesses and educational institutions that will lead to the creation of jobs in Ohio.

The Edison Program operates through the Ohio Department of Development. The Industrial Technology and Enterprise Advisory Board (ITEAB), a bipartisan advisory board consisting of two legislators, and seven private citizens appointed by the Governor, assists the Director of the Department of Development in administering this Program. The Edison Program comprises three separate initiatives:

Search for Innovative Technology (Search): The Search Program is designed to help establish an organized and on-going structure within participating universities and colleges that will identify, evaluate, and document the commercial potential of their technological assets. This program will operate on a pilot basis, providing funds and assistance to certain interested educational institutions in Ohio. The objective of the program is to encourage the eventual transfer of these newly-recognized technologies to the private sector for the start-up of new businesses or as additions to the product lines of established firms.

Further information will be available regarding the Search Program by March 1984. The program is expected to be implemented in the summer of 1984.

Innovative Research Financing Program (IRFP): This program will provide matching capital to support cooperative university/industry joint applied research and development activities. Funded research projects must be cooperative efforts involving an industrial co-sponsor(s) and a researcher(s) associated with an Ohio public or private institution of higher education. The industrial co-sponsor(s) must maintain or propose to maintain a relevant business facility in Ohio and must contribute to the project an amount at least equal to that requested from the State. Two types of funding will be available:

Class 1: Early Stage Feasibility Research: Proposals in this class will be directed towards determining the technical feasibility for commercialization of ideas. A project in this class might involve feasibility-related experimental or theoretical research on an innovative idea. This may include investigations at the cutting edge of technology directed at the development of new processes or systems. Funding for this type of research will be available in amounts up to $50,000. Normally, the research period should not exceed 12 months.

Class 2: Advanced Applied Research: Proposals in this class should result in measurable technical objectives such as the development and refinement of a laboratory prototype, if possible, or functional specifications. Proposals in this class will deal with the application of technology and development of proven concepts toward commercialization. Funding for this type of research will be available in amounts up to $250,000. Normally, the research period should not exceed two years.

Each proposal will undergo a technical review as well as an analysis of the market for the resulting product or process. There is no deadline for applying for funding. Applications will be considered on a rolling basis, with awards announced each month. Processing is expected to take from 10 to 12 weeks. Copies of the IRFP guidelines are available upon request; application forms may be obtained after the applicant has reviewed the guidelines and contacted the Edison staff to discuss the proposed project.

Advanced Technology Application Centers (ATAC's): Through this program, the State seeks to encourage the formation/growth of several major, world-class technology research, development, and implementation centers. Through a challenge grant competition, the State will select for funding Advanced Technology Application Centers with a demonstrated capability to be or become a national or international leader in one or more groups of appropriate fields of technology. Regionally-based, each Center will involve a consortium of academic, governmental, economic development, and business interests. The selection of

a group(s) of technologies as a focus for a Center should be based upon the region's existing strengths and resources, both academic and private sector. The Center must be able to demonstrate how the quality and focus of its R&D program, both with respect to its content and its mechanisms for the transfer of innovative technological developments and expertise to the private sector, will help to create jobs in Ohio through stimulating the start-up of new technology businesses, helping existing enterprise to become more competitive, and acting as a magnet to attract expansions of out-of-state and foreign businesses.

State funding must be at least matched by contributions from the private sector to insure that the proposed Center's activities are relevant to Ohio's industries. Centers are expected to become self-supporting over time. State funds are to be used primarily to finance research and related administrative activities.

Guidelines and application instructions are available upon request. A letter of intent to apply must be submitted to the Edison Program by February 13, 1984. The deadline for applying for the program is April 17, 1984. Applications will then be considered by a select review committee and judged on a competitive basis. The ITEAB will issue a decision on awards at its June 21st meeting.

State funding for this initiative is expected to be approximately $16 million, with the grant to each Center ranging from $2.5 million to $4 million. Funding for each center will be based upon the number of centers selected and the level of matching funds secured from other sources.

Contact: Steve Holtzman, Manager, or Sandra Slezak, Assistant Manager

THOMAS ALVA EDISON PARTNERSHIP PROGRAM
DEPARTMENT OF DEVELOPMENT
P.O. BOX 1001
COLUMBUS, OHIO 43216
(614) 466-3887

STATE OF OHIO
Richard F. Celeste, Governor
Alfred S. Dietzel, Director

Department of Development

P.O. Box 1001 • Columbus, Ohio • 43216

THOMAS ALVA EDISON PARTNERSHIP PROGRAM

INNOVATIVE RESEARCH FINANCING PROGRAM

The Ohio Department of Development will accept applications under the Innovative Research Financing Program. Funding will be provided to encourage new support for applied research and development activities that bear a tangible relationship to new products or processes likely to be produced in Ohio in the near to mid term future. The program is intended to foster cooperative research and development efforts involving industry and educational institutions in Ohio. It is expected that these efforts will result in the creation of new science and technology-based businesses in Ohio, the expansion and increased productivity of existing businesses, and enhanced employment opportunities.

Eligibility: Under the Program, the State and industry jointly support funded projects. Eligibility for funding is limited to cooperative research projects involving an industrial co-sponsor(s) and an Ohio public or private educational institution or department, college, institute, faculty member, or other subdivision or related entity thereof. The industrial co-sponsor(s) must maintain, or propose to maintain, a relevant research, development, or manufacturing facility in Ohio and must make a contribution to the project in an amount at least equal to that requested from the State. While the commitment by the industrial co-sponsor(s) must be made prior to application for a State award, it may be made contingent upon the award of matching funding from the State. The formal recipient of funding will be the academic member of the collaborative effort.

Eligible Projects: Two types of projects will be considered for funding:

Class 1: Early Stage Feasibility Research: Proposals in this class will be directed towards determining the technical feasibility for commercialization of ideas. A project in this class might involve feasibility-related experimental or theoretical research on an innovative idea. This may include investigations at the cutting edge of technology directed at the development of new processes or systems. Funding for this type of research will be available in amounts up to $50,000. Normally, the research period should not exceed 12 months.

Class 2: Advanced Applied Research: Proposals in this class should result in measurable technical objectives such as the development and refinement of a laboratory prototype, if possible, or functional specifications. Proposals in this class will deal with the application of technology and development of proven concepts toward commercialization. Funding for this type of research will be available in amounts up to $250,000. Normally, the research period should not exceed two years.

For further information: Contact Steven Holtzman, Manager, or Sandra Slezak, Assistant Manager, Thomas Alva Edison Partnership Program.

STATE OF OHIO
Richard F. Celeste, Governor
Alfred S. Dietzel, Director

Department of Development

P.O. Box 1001 • Columbus, Ohio • 43216

THOMAS ALVA EDISON PARTNERSHIP PROGRAM

ADVANCED TECHNOLOGY APPLICATION CENTERS PROGRAM

The Ohio Department of Development will accept applications under the Edison Programs **Advanced Technology Application Centers Program.**

Through this initiative, the State seeks to encourage the formation/growth of several major, world-class technology research, development, and implementation centers. Through a challenge grant competition, the State will select for funding Advanced Technology Application Centers with a demonstrated capability to be, or become, a national or international leader in one or more groups of appropriate fields of technology. Regionally-based, each Center will involve a consortium of academic, governmental, economic development, and business interests. The selection of a group(s) of technologies as a focus for a Center should be based upon the region's existing strengths and resources, both academic and private sector. The Center must be able to demonstrate how the quality and focus of its R&D program, both with respect to its content and its mechanisms for the transfer of innovative technological developments and expertise to the private sector, will help to create jobs in Ohio through stimulating the start-up of new technology businesses, helping existing enterprise to become more competitive, and acting as a magnet to attract expansions of out-of-state and foreign businesses.

Each Center will provide a wide array of services relevant to economic development through technological innovation. The core activity of the Center will consist of joint private sector/university research and development efforts (both basic research of interest to an industry cluster, as well as applied contract research for particular firms) and programs for transferring advanced technology to mature industries to facilitate modernization and enhance productivity and to entrepreneurs to start new advanced technology businesses. In addition, each Center should initiate new or enhance existing programs for scientific education and technology training and retraining to meet the workforce needs of the future. Around these core activities, Centers are encouraged, as appropriate, to develop programs, linkages, etc. that will enhance the climate of the state for technological innovation and entrepreneurship.

The cornerstone of any Center selected will be its research and development excellence. However, academic excellence in and of itself is not a goal of the Edison program. Economic development and growth will occur only if the fruits of academic research and development are brought to bear on business and industrial problems in a timely and relevant manner. This is more likely to happen when industrial views and concerns are allowed to inform the research agendas of Ohio's academic institutions. Consequently, funds provided under the Edison Program are intended to catalyze new and enhance existing mutually beneficial cooperative relationships among academic, business, and governmental resources aimed at economic growth through the development and implementation of innovative advanced technologies. The Department is of the belief that through a partnership involving Ohio's governmental, business, and educational communities, the concerted effort necessary to revitalize the State's economy and ensure its future growth and stability can be successfully implemented.

Total State funding expected to be available under this Program is **$16 million.** In no instance will a grant to a Center exceed the amount committed by non-state government sources. The grants to each Center are expected to be in the range of $2.5 million to $4 million. The exact funding level for each Center will be determined on a competitive basis, depending upon the number of centers selected, the relative merits of the applicants, and the level of matching non-state government funds secured by each applicant.

General guidelines and application information will be publicly released on December 19, 1983. Interested parties must notify the staff of the Thomas Alva Edison Partnership Program of their intent to apply under the ATAC's program in writing by February 13, 1984. Deadline for applications is April 17, 1984. The selection of Centers is expected to be announced at the June 21, 1984 meeting of the Industrial Technology and Enterprise Advisory Board.

For further information: Contact Steven Holtzman, Manager, or Sandra Slezak, Assistant Manager, Thomas Alva Edison Partnership Program.

Senator DOLE. President Toll.

Dr. TOLL. Thank you, Senator. I do have a statement which I hope has been made available to you, and will be a part of the record.

Senator DOLE. Yes; I have that.

Dr. TOLL. Therefore, I will not read any of it, but I would like to summarize. And in particular, I would like to answer Senator Metzenbaum's point.

Senator DOLE. Good.

STATEMENT OF JOHN S. TOLL

Dr. TOLL. I am John Toll. I am president and professor of physics at the University of Maryland, your nearby university, but I am testifying today on behalf of the four major national associations that represent the major research universities and their universitywide concerns that relate to patents. They are: the American Council on Education, which is the over-arching organization of all of the institutions of higher education; the American Association of Universities, which represents the 50 major research universities in our country; the National Association of State Universities and Land Grant Colleges, which represents the major public institutions of the country, and the Council on Governmental Research, which is an organization we have formed to represent our interests particularly related to Government regulations in patent policy, and A-21, and so on.

I speak on behalf of all of these groups, at their request, and I speak in strong support of Senate bill 2171, the Uniform Patent Procedures Act.

First, let me say I want to congratulate you, Senator Dole, on the landmark legislation that was the University and Small Business Patent Procedures Act of 1980. That has been an extremely important act, which has allowed us to accelerate the process of taking patents based on discoveries in universities and applying them in the commercial sector; it was a very valuable step. Senate bill 2171 is just a natural extension of that earlier act, so it will apply to all of business, not just to small business. It also has, I think, many other desirable features—giving the Department of Commerce an important central role that I think is important; it allows the 5-year cap on licenses that would be issued to be extended, which is extremely important in some areas. In biotechnology, for example, it is almost impossible, with all the tests you have to do, to bring a product to market within a 5-year period if it involves, for example, a human pharmaceutical or something to be used in disease. There are simply too many trials to be completed in that kind of timeframe.

It is necessary, I think, also to make it possible for Federal governmental laboratories to participate to a great extent, and there are important changes in this act that allow the governmental laboratories to be better partners with universities and business in joint research activities. I frankly hope you go even farther than in this act, with the goal of making a major laboratory of the Federal Government, have all the rights, and essentially, freedom and flexibility that you give, under the previous act, to universities. And I

hope that you could explicitly delegate that authority to the director of a major Federal laboratory. This delegation would provide desirable flexibility and cut the redtape that people have been complaining about.

But whatever you do, I think this act, so far as it goes, would be a major step ahead. Let me give just one example, an activity in which my own university is now involved: I left a meeting this morning with businessmen from this region who were discussing how they can be involved in a new project that has been launched by the University of Maryland in cooperation with the National Bureau of Standards in Montgomery County, MD. This project is a center for advanced research in biotechnology, a true cooperative effort between a Federal laboratory and a university seeking to draw in all interested industrial partners. We have planned this program in close cooperation with industrial laboratories in our neighborhood. They participated from the very beginning in the development of related academic programs and we were the first university in the country to develop an academic program, in applied molecular biology, where part of the training of these students, at both the undergraduate and graduate levels, involves work in laboratories of companies like Genex and Litton and Bethesda Research Labs. We have developed the program with industrial cooperation at every level.

To develop a field like biotechnology, where the expense is great and where the payoff is uncertain, will take close cooperation of the Federal Government, major universities, and businesses—not just small businesses, but all businesses. I can give an example: Already, we have been working with DuPont Corp., to product human interferon. And Senator Metzenbaum is right—once you have made the discovery and patented it, you can then go out and make arrangements with someone to produce it. But we want to accelerate the process by getting businesses to participate from the beginning as partners, with universities and the Federal Government, in the development of the new discoveries. If businesses are to make investment at that stage, they have to know in advance, before the discovery has been made, that their investment will lead to patents which will be protected during the period of development. Senate bill 2171 will encourage such arrangements for joint business—Federal Government-university endeavors. Senator Metzenbaum focused only on what you can do in the commercialization after the discovery has been made. This act would allow the partnership to begin in the research and discovery process and to continue right through to the commercialization. Such partnerships will be especially important in this new field.

We are planning, therefore, to have industry work with us at every stage. We want joint computations on biomolecular structure and function, to decide how to move a particular chemical group from one part of a molecule to another, in order to achieve the most effective benefit in some commercial process such as the production of a new pharmaceutical or a new food.

So we think that the steps involved in this law are very important in helping our Nation to be fully competitive in the development of such rapidly developing new fields as biotechnology and software engineering.

Senator DOLE. Well, as you know, Senator Mathias is the chairman of this subcommittee, so I hope you will have an opportunity to express your views to Senator Mathias.

Dr. TOLL. I have already done so, sir.

Senator DOLE. I believe he is supportive, but it would be very helpful, and, Mr. Holtzman, if you will get a hold of the Governor, who will get a hold of Senator Metzenbaum. In addition, we need to stimulate some activity on the House side. A bill has been introduced, but that's all. I think it is important. It seems to me that we are all digging around here trying to find ways to do things, and this is one that is there for the asking. There is a lot of interest, a lot of willingness for people to go ahead. And I think if, in fact, Senator Metzenbaum and others raise questions that should be addressed, we are going to do that.

Dr. TOLL. Senator Metzenbaum seemed to focus on the questions that relate to the business privileges, but I think it is important also to make it convenient and easy for scientists in Federal laboratories, who are Federal employees, or scientists at Federal contract laboratories, to participate in this process. This bill is an important step in that direction, and I hope you can go even farther than the bill does.

Senator DOLE. I think he has a general mistrust of the private sector, so you have to allow for that. [Laughter.]

We appreciate it very much, and we will be working with you, I assume, as we put this together.

Thank you.

Dr. TOLL. Thank you, Senator.

[The following material was submitted for the record:]

PREPARED STATEMENT OF JOHN S. TOLL

PRESIDENT, UNIVERSITY OF MARYLAND

on behalf of

AMERICAN COUNCIL ON EDUCATION

ASSOCIATION OF AMERICAN UNIVERSITIES

NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES

COUNCIL ON GOVERNMENT RELATIONS

Mr. Chairman, and members of the Senate Judiciary Subcommittee on Patents, Copyrights, and Trademarks

My name is John S. Toll, I am the President of the University of Maryland. I am here to testify in favor of Senate Bill 2171, the Uniform Patent Procedures Act of 1983. I do so, not only as a representative of the University of Maryland, but also on behalf of four prestigious national associations of universities. They are: the American Council on Education, the Association of American Universities, the National Association of State Universities and Land-Grant Colleges, and the Council on Government Relations.

The University and Small Business Patent Procedures Act of 1980, now Public Law 96-517, cleared away many of the impediments in the application of technological discoveries to commercial use. It was truly landmark legislation that resolved very complicated ownership issues that arose when an invention was made by university scientists in the performance of a federal grant or contract. It was extremely important legislation and the provisions which allow universities clear ownership to inventions have already eased some of the problems in developing collaborations with private firms. Small businesses under the 1980 legislation shared similar patent rights, but these rights were not extended to large businesses.

Senate Bill 2171, which I am here to support, is aimed at providing all performers of federally funded research with all the rights they need to deal with each other in collaborative arrangements. It does this, in large part, by creating uniform policies and procedures regarding patent rights and inventions developed with federal assistance, thus extending ownership rights to all businesses whether large or small.

The bill also allows ownership rights to contractors other than universities who manage government-owned laboratories. Senate Bill 2171 removes certain restrictions on universities in licensing of their inventions. For example, it removes a five year cap on granting an exclusive license to an industrial firm (other than a small business). The bill also permits federal agencies to waive conditions attached to the ownership of university inventions. Agencies may waive those conditions if it is the public interest to do so, and if the federally assisted university research involves co-sponsors, cost sharing, or joint venture research. Taken together, these provisions will create needed flexibility for universities and for other performers of federally-funded research to structure collaborative projects.

Let me give one example: Recently, the University of Maryland joined with Maryland's Montgomery County and the National Bureau of Standards in an undertaking that illustrates, not only the new kinds of research relationships that are being conceived across America, but also the kind of collaborations that would be fostered and enhanced by S. 2171. The University of Maryland, Montgomery County, and the National Bureau of Standards entered a formal agreement to establish a Center for Advanced Research in Biotechnology. The Center will be located in a tract at Shady Grove that Montgomery County has designated for the nation's first Biotechnology Research Park. The Center will be a research resource for biotechnology firms throughout the nation. Our goal is to encourage close collaboration with many industrial partners in this rapidly developing field. Several high technology firms, already committed to establishing biotechnology laboratories in the park, enthusiastically support plans for the Center.

The development of agreements with industries for collaborating with the Maryland Center for Advanced Research in Biotechnology will be greatly assisted by the flexibility S. 2171 intends to provide. For example, Litton Industries manages a federally-owned laboratory for the National Institutes of Health. Under the bill, ownership rights to inventions would be extended to contractors such as Litton, who operates government-owned research facilities. With that provision, Litton could enter into new and useful kinds of collaborative projects with the Center.

As universities across the country develop new research arrangements with private enterprises, flexibility in structuring these relations will become increasingly important. These growing research collaborations will often involve government as well as universities and industry, and I am convinced that they will be very beneficial, not only to the participants, but also to the nation's technological base. Senate Bill 2171 provides a timely incentive to enhance these desirable trends in research. The bill also provides incentives for private performers who have not yet participated individually, or as collaborators, in federally assisted projects. With the passage of S. 2171, they will be able to do so without concern for the loss of proprietary positions.

I have emphasized our support for the provisions of the bill that will ease the development of research cooperation between universities and private industries. I must not fail to mention other improvements in the bill as well. For example, the bill would expand the definition of inventions to include certain novel plant varieties, and this would assure university ownership of some inventions from agricultural research not previously covered by Public Law 96-517. We are pleased also that the bill will incorporate certain reporting provisions that universities favor and which are now only regulatory provisions.

In summary, the provision of S. 2171 will benefit American business, will benefit the nation's universities, and will foster research collaborations between universities and private firms. I believe that the bill will enhance collaborations in ways that will significantly shorten the time line from discovery to commercial application; in that way it will benefit American technology and the nation as a whole. I strongly urge adoption of S. 2171.

Written Questions of Senator Dole
for Dr. Toll, President, University of Maryland

1. How important has P.L. 96-517 been to universities for working with industry? Have you had any problems with the provisions in the law which limit the time that you can exclusively license a patent to a large company?

2. The idea you mentioned for the biotech center sounds interesting. What impact do you see such centers having on the local economy? Will removing barriers to disposition of federally funded inventions such as those we are discussing today have an important impact on your efforts?

37-360 O—84——7

3. You are working with the Department of Commerce on setting up your center. I understand that Commerce has a liberal attitude on patent policy. What do you think will happen if you try to work with entitities like the National Institutions of Health -- which are geographically near you and are working on projects which might tie in nicely with your efforts -- but which have no identifiable policy for disposing of inventions by their employees in collaborative projects? Is a definitive policy such as that in S. 2171 necessary?

* * *

RESPONSE OF JOHN S. TOLL

TO WRITTEN QUESTIONS SUBMITTED BY SENATOR DOLE

UNIVERSITY OF MARYLAND
CENTRAL ADMINISTRATION
OFFICE OF THE PRESIDENT

ADELPHI, MARYLAND 20783
(MAIN OFFICE) (301) 853-3601

BALTIMORE, MARYLAND 21201
(301) 528-7000

April 18, 1984

The Honorable Robert Dole
United States Senate
Committee on the Judiciary
Washington, DC 20510

Dear Senator Dole:

I thank you for the opportunity to testify in favor of S. 2171 before the Committee on the Judiciary, Subcommittee on Patents, Copyrights and Trademarks, on March 27, 1984. I am pleased also to be able to respond to the additional questions you raised in your letter of April 6, 1984.

Public Law 96-517 liberalized the rights to university inventions discovered with federal support. This has been very important for universities in developing working relations with industrial firms. Nevertheless, P.L. 96-517 retains a limitation that places a cap on the time that a University can exclusively license a patent to a large company. That limitation is an undesirable and unnecessary hindrance. For example, the University of Maryland at College Park recently concluded an agreement with a large firm, but arriving at that agreement was much more prolonged, arduous, and entangled than it should have been. The untoward delay related directly to the term of an exclusive license. We were unable to negotiate the agreement without the complicated involvement of the federal agency that had supported some of the research.

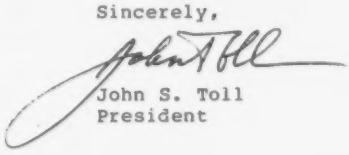
Other universities are having similar difficulties. These difficulties may become critical when federal agency approvals are involved. For example, if the invention is a pharmaceutical or a medical device that requires FDA approval, or if it is an agricultural chemical that requires EPA approval, the time required for approval may leave insufficient time under an exclusive license for an industrial firm to develop a product and to recover the development costs.

The Center for Advanced Research in Biotechnology, a joint venture of the University of Maryland, the National Bureau of Standards, and the government of Montgomery County, Maryland, is expected to have a large and favorable impact on the local economy. In fact, anticipation of that favorable impact was one of Montgomery County's primary motives for joining this effort. The Center will be a scientific and technological resource, and several high technology firms have already decided to build laboratories near it. We anticipate that other firms will be attracted to the locale.

Building, staffing and servicing these private endeavors will provide desirable new jobs in the country. Small businesses in the area, businesses too small to establish their own research efforts, should benefit also through collaboration with the Center. The removal of federal barriers to ownership of inventions will surely enhance all of these relationships.

Universities generally have little experience with the disposition of inventions made by government employees in collaborative projects, and the limited flexibility federal officials have in such matters. We can surmise, however, that uniform and liberalized policies would be beneficial. For example, it seems likely and perhaps inevitable that our Center for Advanced Research in Biotechnology will collaborate with more than one agency of the federal government. Under present laws and regulations, it is also likely that we would encounter different views of the options available to those agencies in the disposition of an invention. Any relief from this kind of administrative uncertainty would surely be important to any firm that might be interested in a license to develop the invention, or that might consider joining the collaboration.

Sincerely,



John S. Toll
President

Senator DOLE. Our next panel includes Dr. Jerome Hudis, assistant director, Brookhaven National Laboratory, Upton, NY; Dr. Phil Livdahl, deputy director, Fermi National Accelerator Laboratory, Batavia, Ill.; Dr. Frank Lukasik, chief, Patent Law Division, AFSC/JAT, Andrews Air Force base, and Dr. Edwin Yates, patent management officer of the Johns Hopkins University in Baltimore, MD.

Again, if we can get everyone to just sort of highlight the points they would like to make in their testimony, so that we might still have the other panel, since I assume they would rather finish now than at 3 o'clock this afternoon.

Dr. Hudis.

STATEMENTS OF DR. JEROME HUDIS, ASSISTANT DIRECTOR, BROOKHAVEN NATIONAL LABORATORY, UPTON, NY; DR. EDWIN T. YATES, PATENT MANAGEMENT OFFICER, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD; DR. PHILIP V. LIVDAHL, DEPUTY DIRECTOR, FERMI NATIONAL ACCELERATOR LABORATORY, BATAVIA, IL; AND FRANK A. LUKASIK, CHIEF, PATENT LAW DIVISION, AFSC/JAT, ANDREWS AIR FORCE BASE, MD

Dr. HUDIS. My name is Jerome Hudis, and as you said, I am assistant director at Brookhaven Laboratory, and I am in charge of our technology transfer efforts there.

I welcome this opportunity to speak to the committee, and you have my prepared statement, which I would like to be included in the record.

Senator DOLE. It will be. All the statements will be made a part of the record.

Dr. HUDIS. Fine. And I will summarize my summary, so that I will really cut it quite short.

Brookhaven is a large, multiprogram laboratory, operated by Associated Universities, Inc., under contract with the Department of Energy. So we are a GOCO, a government-owned, contractor-operated laboratory, and this is one of the groups that your bill is specifically aimed at.

Our major mission is to build and support research upon large, complex experimental facilities, such as particle accelerators, nuclear reactors, et cetera. We support the research not only of our own staff, but of a large contingent of scientists from all over the country and all over the world. These scientists come from universities, from other laboratories, and from industry.

Now, in the last few years, in large part because of changes in law and in practice, we have been able to operate on a simple, two-tiered system for industrial scientists who want to work at the lab. If they want to do academic research—that is, they are willing to publish their results—they can come and be treated just like other academics. For designated user facilities, there is no fee, and they sign the BNL patent agreement, which assigns all rights to the Department of Energy.

If, on the other hand, they want to carry out proprietary research, then their firm must pay our published, full-cost recovery rate, and they get the title to all inventions that result from their labors, and the government retains the license to use that invention themselves. This works well, and we have many industrial people working at our laboratory under both modes. Interestingly and sadly, the greatest remaining single barrier to our transfer of laboratory-developed technology to the commercial sector is associated with the licensing of rights to inventions made by our own staff of scientists and engineers, and it is this weakness, a weakness which we believe is inherent to the present system, which is addressed by the bill under consideration.

Title to all inventions of Brookhaven staff now go to the Department of Energy. We believe that if, instead, assignment of title went to the contractor—I am not quite as brave as Dr. Toll, who said they should all go to the director of the laboratory—it would greatly improve our ability to transfer the discoveries and inventions of our staff to the commercial sector for the following four simple reasons.

One: We would have closer interaction between the inventor and the interested commercial party. This interaction from the very beginning of the technology transfer process would open up the possibility of additional developmental work when it is needed, which is often the case. And this kind of developmental work could take place in many ways—through a joint venture with the laboratory; the firm could hire our scientists as a consultant, or they could even, perhaps, hire our scientist away from the laboratory. We do not necessarily approve of this last one, but it is a possibility.

Two: Our staff would have greater interest in pushing for commercialization. There would be a great personal and institutional satisfaction in seeing a viable end-product result from our efforts, and we would be in a position to assist in this process.

Three: Operationally, we would have greater freedom in making some very important and difficult decisions, such as mentioned before, the decision as to whether we feel an exclusive license is

needed to move the product into the marketplace, which of the competing groups should be chosen, and how—all of these points have been raised before, and they are all difficult.

Theoretically, as we all know, it is possible for the government to make these decisions. As we also have heard today, it is very difficult in practice.

Four: Finally, we believe that we would get a much better response from industry. They would now have to work with only a single nongovernment entity that could reach equitable decisions, and perhaps as importantly, could implement such decisions within the time frame which is essential to the company, if they are going to make the invention commercially attractive and competitive.

So, these are four simple reasons why we favor the aims of the bill under discussion.

Thank you.

Senator DOLE. Thank you.

[The following material was received for the record:]

Prepared Statement of Jerome Hudis

Brookhaven National Laboratory welcomes the opportunity to share with the Senate Judiciary Committee, Subcommittee on Patents, Copyrights and Trademarks, its views concerning the present successes and failures it is experiencing in its technology transfer efforts, with specific attention to the positive impact we project would result from passage of S.2171.

Brookhaven National Laboratory is operated by Associated Universities, Inc. (AUI) under a contract with the United States Department of Energy (DOE). The Laboratory conducts a broad range of basic and applied research programs in the physical and life sciences. The primary objectives of the Laboratory are:

- To seek new scientific knowledge, with emphasis on programs that require large-scale research tools such as particle accelerators, nuclear reactors, and special laboratories that are beyond the scope of individual educational institutions.
- To encourage use of its facilities by scientists from universities, research institutions, and industry.
- To assist DOE in the performance of tasks that utilize the Laboratory's unique facilities and organization or the special talents of its staff.
- To serve as an important auxiliary in the training of scientists and engineers, and otherwise to assist in the dissemination of scientific and technical knowledge.

The diversified research program at the Laboratory is carried out in nine distinct but inter-related departments: the Accelerator Department which is the focal point of the high energy research programs and which operates the Alternating Gradient Synchrotron; the Physics Department, which conducts research in the fields of nuclear physics, supported by facilities such as the Laboratory's tandem accelerators and high flux beam reactor, solid state physics, and atomic physics; the National Synchrotron Light Source Department; the Chemistry Department, which has a large research program in the field of radio-labeled pharmaceuticals made possible by the Laboratory's cyclotron facilities; the Medical Department, which has an active nuclear medicine program which makes use of the Laboratory's medical reactor and an isotope preparation program which uses the Laboratory's linear accelerator; the Biology Department, which is actively engaged in genetic engineering research and has an active group working at our Scanning Transmission Electron Microscope; the Department of Applied Science, which conducts research in the fields of energy sciences, environmental sciences, and materials sciences; the Department of Nuclear Energy, which works in areas such as nuclear safety, nuclear waste management, nuclear material safeguards, and advanced reactor systems; and the Applied Mathematics Department.

It is obvious that a laboratory like Brookhaven, with such a vast and diversified basic and applied research program, has many different avenues to follow in disseminating the results of the research it conducts and in transferring the technology and expertise it develops. Publication in scientific journals or presentation at professional meetings is one avenue consistently used by the Laboratory. Approximately 3,700 papers appeared from the research laboratories within Brookhaven during fiscal years 1982 - 1983. Our scientists often are asked to share their expertise with private industry by acting as consultants to the private sector. In fiscal year 1983, approximately 20 consulting arrangements were approved by the Laboratory which involved Laboratory personnel performing consulting work for third parties. The Laboratory has always been an

attractive site for academic researchers, researchers from federal laboratories or national laboratories, and to a lesser extent researchers from industry, to spend their sabaticals or time available to them for advanced research. Approximately 2,600 visiting scientists conducted research at the Laboratory during fiscal years 1982 - 1983. These statistics show that the Laboratory has been very successful in pursuing these avenues of technology transfer.

As is apparent from the above discussion of the different research programs conducted at Brookhaven, the major mission of the Laboratory is to conceive, build, operate and perform research upon large, complex experimental facilities such as particle accelerators like our Alternating Gradient Synchrotron, our High Flux Beam Reactor, and on our new machine, the National Synchrotron Light Source, which has sources of both vacuum ultraviolet and x-ray radiation. On all of these machines, as well as our smaller ones, we support the R&D efforts of a national community of scientists and we do everything we can to encourage and increase their use. We have always been very successful in attracting university scientists and researchers from other national laboratories and, as a matter of fact, we have always had a small component of researchers from industrial laboratories, many of them in residence at the Laboratory for some length of time.

We believe that an important component of our technology transfer program is to expand the usefulness of these large research devices to the industrial community. In the last few years, scientists from the industrial community have been encouraged to make greater use of the facilities and the expertise at the Laboratory. There are several reasons for this. First, we have built some facilities, like the National Synchrotron Light Source, which have many applications which are of very great interest to industrial researchers. Second, in the last few years there have been a number of changes, both in law and in practice, which have removed some restrictions facing the industrial community in using the facilities of the national laboratories.

Industrial researchers doing basic research at our facilities, the results of which will be published in the open literature, have the same access to the facilities as university researchers. If industrial researchers on the other hand, wish to use our facilities to do proprietary work, this is also possible through use of the Class Waiver issued in 1982 by the U. S. Department of Energy. In such cases, we first determine that the industry research is a reasonable thing to do at the facility, and then we publish a full cost recovery rate covering such research. If the industrial firm pays this full cost recovery, they are entitled to the benefits of the class waiver which allows them to take title to all inventions that result from the research conducted at Brookhaven. The Government, of course, retains a license to use the technology for Government purposes.

These operating procedures have been extraordinarily successful in attracting industrial scientists to our facilities in the last few years. For example, in one of our major user facilities, the National Synchrotron Light Source, scientific groups from prestigious industrial laboratories such as Bell Labs, IBM, Exxon, Mobil, and Allied Corporation are active participants in the ongoing research efforts. The extent of this interest can be judged in part by the fact that of the approximately 15 million dollars in equipment which was invested in the beam lines, the experimental facilities around the accelerator, a full one third of that investment has been made by the industrial community and of that approximately 5 million dollars, ownership of equipment valued at more than one million dollars has already been transferred from the industrial users to DOE.

Passage of the Class Waiver by DOE also opened up another technology transfer path that is attractive to industry. It permits

Brookhaven, and the other DOE national laboratories, to conduct proprietary research programs on behalf of industrial sponsors. DOE must first approve the conduct of such research at the Laboratory to insure that there is no interference with the DOE programs. Then, if the industrial sponsor pays full cost recovery, it is entitled to the benefits of the Class Waiver which provides it with title to any inventions made during the course of the work funded at Brookhaven. Educating the industrial community of this possibility has been a slow process but we are now beginning to see increased industrial interaction with our scientific staff which has resulted, over the last 14 months, in thirteen industry sponsored proprietary research programs at the Laboratory, at a total funding level of $2,068,177.

Clearly, in the areas of dissemination of scientific information, use of Brookhaven facilities by academic and industrial scientists, sharing of Brookhaven personnel expertise through consulting arrangements, and use of Brookhaven facilities and personnel for proprietary research, DOE, Associated Universities, Inc. and Brookhaven as a team are very successful. There is no question, all of these routes are extremely important avenues of technology transfer.

However, there is one critical flaw in our technology transfer effort. The greatest barrier we face involves the difficulty we consistently experience in encouraging the development and use by industry of inventions and processes which result directly from the work of our own scientific and engineering staff. In other words, we have experienced very little success in transferring discrete inventions developed at Brookhaven to the private sector. Since Brookhaven is a basic research laboratory and not in the business of manufacturing and marketing products, the public will never benefit from new products or new technologies developed at the Laboratory unless we can successfully interest private industry in picking up that technology and commercializing it. It is this one glaring weakness in our technology transfer ability that is addressed and corrected by the bill being considered at today's hearings.

Under the present contract between DOE and AUI which governs the operation of Brookhaven, DOE takes title to all inventions made by Brookhaven scientists. Over the last four fiscal years (1980 - 1983), 181 invention disclosures were submitted to DOE from Brookhaven; of these 181 inventions, 83 are or will be the subject of U. S patent applications. DOE has not granted one exclusive license to private industry under any of this technology or as a matter of fact under any earlier work developed at the Laboratory. The Congressional hearings that led to the passage of Public Law 96-517 (Dole-Bayh) and Public Law 96-480 (Stevenson-Wydler) certainly established the importance of exclusivity in concluding that the public only benefits from an invention after industry develops, manufactures and markets it, and industry will only make the necessary investment if it is certain that its market position is insured through ownership or licensing of patent rights covering the invention.

Although in theory the exclusive licensing ability does exist for DOE, in practice it is not a viable method to transfer technology to the private sector. To begin, it is DOE's philosophy that they will grant exclusive licenses only as a last resort. As one consequence of this they have interpreted the licensing provisions of P.L. 96-517 as providing that an exclusive license cannot be granted if another firm applies for a non-exclusive license under the same patent or patent application. In the only instance where a company interested in Brookhaven technology has gone through the time consuming process of applying to DOE for an exclusive license, this petition was dismissed by DOE when a second firm applied for a non-exclusive license. Of course, the first firm has now lost interest in this technology, and

we do not know if the non-exclusive licensee will attempt to develop the invention.

Equally significant however, is the fact that the complicated and time consuming procedures established to implement the licensing provisions of P.L. 96-517 discourage most industrial firms before they even seriously consider petitioning DOE for an exclusive license. A few examples from our recent experience might illustrate this:

1. Furfuryl alcohol polymer concrete product developed at Brookhaven - covered by U. S. Patent 4,361,670 issued 11/30/82 - five companies expressed serious interest in this technology until we provided them with in depth information on the licensing regulations - not one firm applied to DOE for a license - all indicated they would have been interested in negotiating a license arrangement with Brookhaven directly but did not want to get involved with DOE's procedures - all indicated that even if they could overcome their management's resistance to negotiate a license with the government, they could not afford the lengthy time delay that would be involved before DOE could reach a decision on whether or not to grant a license.

2. Hydrocarbon catalysts developed at Brookhaven - U. S. Patent 4,396,539 issued 8/2/83 - one firm expressed interest - same results as above.

3. Baseband digital data communications network developed at Brookhaven, U. S. patent application S.N. 443,982 filed 11/23/82 - two firms expressed interest - same results as above.

4. Flat plate solar collector developed at Brookhaven - U. S. Patent 4,327,707 issued 5/4/82 - three firms expressed interest - same results as above.

5. Magnesium phosphate glass cements developed at Brookhaven, U. S. Patent 4,436,555 issued 3/13/84 - four firms expressed interest - same results as above.

Needless to say, the above type of experience is extremely discouraging to the Laboratory and certainly does not foster enthusiasm among Laboratory personnel for this avenue of technology transfer. Our experience, and that of the other DOE laboratories, also leads us to conclude that a case by case waiver approach is not feasible because of time delays and uncertainty in outcome. We do not envision that the national laboratories could use DOE's waiver regulations to bring about the transfer of title in inventions from DOE to the contractor operating the Laboratory. Brookhaven has had only limited experience trying to make use of these regulations. A peptide affinity label for thrombin was developed in our Biology Department. In December 1979 Brookhaven petitioned DOE to waive title to this invention; in March 1982 U. S. Patent 4,318,904 issued on this invention; in April 1982 DOE finally granted the waiver to Brookhaven, but with an indication that the waiver had only been granted because Brookhaven had worked with Research Corporation on this case. Such an inordinate time delay could in itself destroy the commercial value of many inventions.

Thus, to summarize, the difficult and time-consuming process of acquiring from DOE a license, with protection sufficient to warrant the company's investing in the development and marketing efforts needed to convert the invention to a viable commercial product, has usually turned even venturous companies away from the Laboratory's inventions.

Another difficulty in trying to transfer inventions developed at Brookhaven to the private sector is based on the fact that we are mainly a basic research laboratory and the unique inventions and processes developed at the Laboratory tend to need appreciable amounts of development work even before it becomes apparent that these inventions may be commercially interesting; interesting enough to warrant the investment of the large amounts of money, time and expertise required to go from something on a shop bench or from an experimentor's laboratory to a production item or process. With no special driving force to undertake at least some preliminary development work the inventor on the laboratory staff usually turns to new and different experiments. The experimental results are published, the invention patented, and in theory it becomes available to all interested parties. But it is really of no great interest to commerce because it is still at such an early stage that it is not really clear that it warrants the investment to develop a product. If, as would be provided by the current bill, the Laboratory could control the disposition of rights to the invention, there would be this incentive for laboratory personnel to do the additional developmental work that would get the technology to the stage that it could be picked up by industry.

Recently, the national laboratories have been the subject of two in depth reviews, the Report of the White House Science Council (the Packard Report) issued May 1983, and the Report of the Multiprogram Laboratory Panel of the Energy Research Advisory Board, (ERAB), which dealt only with the DOE national laboratories, issued September 1982. Both groups considered in the review of the laboratories the question of the effectiveness of the laboratories' technology transfer capabilities, and both concluded that regulatory and policy changes in the patent field had to be made in order for the technology transfer effort to be successful. The following quote from the ERAB Report is germaine to a consideration of the problems we have addressed above and the solution offered by S.2171:

> "The Department's (DOE's) patent policy, ... has been among the salient barriers to cooperative relationships with industry and to effective technology transfers." page 7-8 of the Final Report.

Apparently in response to these findings, DOE hosted a meeting in February 1983 to investigate the laboratories' technology transfer efforts and the laboratories' recommendations for changes in DOE policies and regulations that would improve the transfer climate. We have attached to this testimony a copy of the formal submission we made to DOE in advance of this meeting (Samios letter of 2/1/83 to Decker). You will note from this letter that as early as April 1982 Brookhaven had formally approached DOE with a request that its prime contract be amended, as was possible after passage of P.L. 96-517, to permit the Laboratory to retain title to its inventions. Our letter of 2/1/83 to DOE voices our concerns over the effect of title left in DOE and expresses our opinion that many of these concerns would be overcome by leaving title in the laboratory.

Also attached to this testimony is our letter of April 4, 1983 (Bogosian to Decker) which followed the DOE meeting and in which we again discuss the ownership of inventions issue. The final attachment to this letter is a summary sheet that was prepared by Battelle's Pacific Northwest Laboratory and which outlines the responses submitted to DOE from all the DOE national laboratories in preparation for the February 1983 meeting. This summary sheet clearly shows that in addition to Brookhaven, a number of the other national laboratories, including Los Alamos National Laboratory, Stanford Linear Accelerator, and Lawrence Berkeley Laboratory, endorsed ownership of inventions by the contractor and almost all the

respondents identified DOE ownership of inventions as an impediment to technology transfer.

Brookhaven is well aware of the sharp increase in the patenting and licensing of technology by universities that has followed passage of P.L. 96-517. We understand that approximately one third of university held patents are now licensed. The universities have been successful in establishing technology transfer offices and industry seems comfortable dealing with these offices rather than having to go through the bureaucratic maze of dealing with the government agency that originally funded the research. We anticipate similar results if title was left in the contractors operating the national laboratories.

In conclusion, we believe that we can greatly improve our technology transfer posture with respect to technology developed at the Laboratory if title to such work was left in the Laboratory. This aim would be accomplished by passage of S.2171. We support the bill for the following reasons:

- There would be closer interaction between the inventor and the interested commercial party. This interaction from the very beginning would open up the possibility of additional development work either through a joint venture with the Laboratory or by hiring the inventor away from the Laboratory or by using the scientist as a consultant. Collaborative research permits cross fertilization between laboratory and industry scientists which results in a new vitality in our research programs.

- Our staff would have greater interest in pushing for commercialization, because of a greater personal and institutional satisfaction in seeing a viable end product result from our efforts and perhaps even obtaining some financial returns from such a venture, although we firmly believe that financial return is secondary and that pride and the satisfaction of seeing Laboratory developed technology available to the public are more important. Having a stronger interest and having the ability to do something about it would improve our ability to transfer technology. The Laboratory would then have the incentive to devote resources to develop a licensing capability because it would have the ability to dispose of rights in its inventions through licensing.

- Operationally we would have greater freedom in making some very important and difficult decisions. For example, the decisions as to whether in our judgment an exclusive license is needed to move the product into the marketplace and as to which of the competing groups should receive the exclusive license are necessary. Theoretically these decisions can be made by the government, but in practice they are difficult and time consuming, and often are never made. We feel that we could make such decisions intelligently and in a timely fashion.

- Finally, we believe that we would receive much better responses from industry since they would now have to work with only a single non-government entity that could reach equitable decisions and implement such decisions within the time frame essential to industry to make the technology commercially attractive and viable.

As we indicated at the outset of this testimony, we welcome the opportunity to testify on behalf of passage of S.2171 before the Senate Judiciary Committee, Subcommittee on Patents, Copyrights and Trademarks.

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
Upton, Long Island, New York 11973

(516) 282-
FTS 666- 2772

Office of the Director

February 1, 1983

Mr. James Decker
Office of Energy Research
Mail Stop 3F-032
Department of Energy
Washington, D.C. 20585

Dear Mr. Decker:

I am writing to you in response to Dr. Alvin Trivelpiece's letter of January 12, 1983. At Brookhaven, we have been exploring for some time the different factors that impact upon our ability to interest business concerns in the innovative research undertaken at the Laboratory. We are, therefore, encouraged to note that DOE is also considering this situation, with special emphasis on the impact of the Department's patent policy, and we are pleased to offer comments on the questions posed in Dr. Trivelpiece's letter. It is our hope that our remarks will prove helpful to DOE as it works towards creating a climate that will improve technology transfer capabilities from the DOE national laboratories to industry.

Following passage of the Stevenson-Wydler Act (Public Law 96-480) and issuance of DOE Order 5200.1, Brookhaven established a formal technology transfer program through its Office of Research and Technology Applications (ORTA). The manager of Brookhaven's ORTA reports directly to the Laboratory's Assistant Director for Scientific Policy and Planning. This organizational location provides the technology transfer office with visibility and with direct access to my office and to my associate directors. Our ORTA also receives direct support and guidance from the Laboratory's Patent Counsel.

The technology transfer office maintains close contact with the research programs at the Laboratory through a laboratory-wide technology transfer committee, which is composed of one or more senior representatives from each research department (in many instances the Department Chairman) the Laboratory's Patent Counsel, and the manager of our ORTA. This committee identifies potentially transferrable technology. An application assessment package is then prepared on each such identified area of technology, following the guidelines in the above-referenced DOE Order. This package is then forwarded to TIC and to NTIS. At the same time a summary of the assessment is distributed to appropriate trade journals and interested research managers in industry and academic research.

When appropriate, technical assistance is provided by Brookhaven through the technology transfer office to state and local government officials. Our ORTA also cooperates with and participates in other organizations that link laboratory R & D to potential users in the private sector and state and local government. Contact has been established with technology transfer brokers and the Laboratory is an active member of the Federal Laboratory Consortium. Plans are underway to host an Innovators Workshop to be sponsored by the Long Island Forum for Technology next September and to prepare a program for members of the Industrial Research Institute.

With respect to the second question posed in Dr. Trivelpiece's letter, we do not know of any way to calculate even an estimate of what we could have collected in royalties over the past ten years. Since DOE retains title to all Brookhaven inventions, and since the regulations that now permit DOE to grant exclusive, royalty bearing licenses to government owned patents have only been in effect since July, 1981, we have no experience in either licensing technology which the Laboratory owns or receiving royalties through a DOE granted exclusive license. In fact, it should be noted that the new exclusive licensing regulations do not contain any mechanism for returning a portion of the royalty income to the laboratory where the technology was developed. Although we cannot give a meaningful estimate on possible income the Laboratory could have had if the government's patent policy had been different over the past ten years, we can point to examples of innovations developed at Brookhaven that have recognized commercial potential. For instance, a red blood cell labelling kit was developed by our Medical Department. This kit is used with approximately 18,000 patients each year in the U. S. by clinical investigators under their Investigational New Drug Applications. A patent was issued to DOE on this product in 1976. However, since it was not possible until recently to get an exclusive position under this patent, no U. S. pharmaceutical firm has applied to FDA for a New Drug Application on the kit. An approved NDA would be necessary before the kit could be marketed here.

I have chosen to group questions three and five in Dr. Trivelpiece's letter together in my response because from our viewpoint they really address the same fundamental concern. When we are dealing with a new field of technology developed at Brookhaven, the most significant impediment we face when we try to interest industrial concerns in performing the additional R & D work needed for commercialization, or in undertaking the marketing studies needed to launch a new product, or in obtaining regulatory agency approval if such is required prior to marketing, is that the technology under consideration is owned by DOE, not by Brookhaven National Laboratory. Many industrial concerns, having experience in the past with the lack of any coherent, government wide patent policy and with the endless delays that were often the norm whenever they requested any type of waiver of government rights, simply refuse to even deal with us on questions of technology transfer. Other firms express an interest in our technology, but are deeply concerned about their ability to obtain exclusive rights from DOE under the exclusive licensing regulations. They are concerned about the long period of time required by the publication provisions of the regulations before DOE can act upon such a licensing request, and they are concerned about the criteria that the government will use in deciding whether or not to grant such a request. They are reluctant to base future product development plans in part on the ever changing political climate that is a fact of life in any federal agency. In most instances, industrial representatives have indicated to us that they would be far more interested in attempting to commercialize Brookhaven technology if title to this technology rested in the Laboratory, so that they could deal directly with the Laboratory concerning questions of licensing.

Thus, we see DOE's retention of title to inventions made at the Laboratory as a significant impediment to our being able to transfer this technology to the private sector. It is our opinion that we could structure a far more effective technology transfer program if we had the option to retain title to inventions made at the Laboratory.

Public Law 96-517 gives universities, non-profit scientific organizations and small businesses the right to elect to retain title to any inventions which they develop in the performance of research under a government funding agreement. Section 202 of the law provides that the funding agency may decide not to apply the provisions of the new law to funding agreements that are for the operation of a government owned research facility. As you are aware, DOE made the policy decision not to apply this new law to any of its national laboratories. At the time this decision was made, we informally discussed with members of DOE's Office of Patent Counsel our concerns about the ramifications of this decision on our ability to interact with industry. Then in 1982, as part of the package we submitted to DOE while we were renegotiating our prime contract covering the operation of the Laboratory for the next five years, we formally petitioned DOE to incorporate the provisions of Public Law 96-517 into our contract, thereby giving the Laboratory the option to retain title to inventions. I have

enclosed a copy of the April 9, 1982, letter from our Patent Counsel to DOE's Chicago Operations Office summarizing our presentation to DOE on this point. DOE's Office of Patent Counsel rejected our petition, and our new prime contract contains the same government retention of title provisions.

Because of the DOE policy not to apply Public Law 96-517 to its national laboratories, we followed with interest the consideration given in Congress last year to the bill introduced into the Senate by former Senator Harrison Schmitt of New Mexico (S-1657). This bill in part would give the contractor who operated a government owned contractor operated (GOCO) facility the right to retain title to inventions developed by GOCO personnel. It is our opinion that passage of a bill substantially the same as S-1657 would enable Brookhaven and the other national laboratories to work much more effectively with industry to accomplish the goal of commercialization of laboratory technology.

We think it is important to keep in mind the Congressional findings concerning the administration of government owned patents that led to the passage of Public Law 96-517 and the Stevenson-Wydler Act and led to the introduction of S-1657. When Senator Schmitt introduced S-1657 to the Senate, he offered the following very critical comments:

> The influence of the Federal Government on the innovation process is extensive. For example, the Federal Government currently supports some $35 billon of research and development through grants and contracts, about half the total national investment in R & D...Unfortunately the policies of Federal agencies vary widely regarding assignment of rights to performers of federally funded R & D. The Government's policy generally has been to retain title and rights to these inventions. As a result, the Government presently holds title to some 28,000 inventions, of which only about 5 percent have been commercialized. (BNA's Patent, Trademark & Copyright Journal, No. 548, October 1, 1981, page D-1).

A companion bill to S-1657 was introduced into the House by Congressman Ertel (H. R. 4564) and the following language from the Report from the House Committee on Science and Technology that accompanied this bill is also of interest:

> The patent system is a factor in this situation. It must be recognized that the Federal Government cannot commercialize and market products or processes that have been developed under the auspices of Federal funding. When the Government keeps title to the inventions made, industry generally will not develop, commercialize, or market these technologies. Without goods or services in the marketplace, the economic benefit of the invention cannot be realized.
>
> A better way is needed to ensure that federally-funded patents are commercialized. (Page 18)

With specific reference to question three in Dr. Trivelpiece's letter, a change in government/DOE patent policy that would permit the Laboratory to retain title would provide both financial and professional incentives to the Lab and its scientists. If title was left in the Laboratory, we would be in a position to license our inventions and earn royalties from such licensing arrangements. Most universities that have established patent administration programs have developed policies that permit their inventors to share in such royalty income, with the residue being put back into support of the research effort. We could consider such a program here. A more subtle incentive would be the knowledge by the Laboratory management and its researchers that there was a greater chance for technology developed here at the Lab to be transferred to the private sector and eventually become available to the general public through commercialization. Utilization of technology developed at the Lab would certainly have a positive impact on the morale in our research laboratories.

The final section of Dr. Trivelpiece's third question addresses the concern that a change in policy might raise the specter of a conflict of

interest. We do not think such a conflict would arise at Brookhaven. This point was addressed by Dr. G. A. Keyworth when he wrote to the Senate presenting the position of the Reagan administration on S-1657. We agree with the comments offered by Dr. Keyworth on the conflict issue as well as on the underlying issue of retention of title by GOCO facilities, and have attached a copy of his letter for your information (letter of July 21, 1982, from Dr. G. A. Keyworth to Senator James A. McClure, U. S. Senate, Committee on Energy and Natural Resources).

Question four in Dr. Trivelpiece's letter raises several procedural questions relative to the program at Brookhaven. We have our own patent department, so that we prepare and prosecute, on behalf of DOE, all patent applications covering Brookhaven inventions. Because of this, we rarely experience any significant time delay in the preparation and filing of our applications. Our patent department conducts the prior art search, discusses the search results with the inventor, prepares the patent application after consultation with the inventor, and files the final patent application after careful review with the inventor. We think this review procedure has worked successfully for us.

With respect to any restrictions we might place on consulting, it is probably best to refer to the pertinent sections of the Laboratory's Scientific Staff Manual which I have enclosed. In brief, the Laboratory's position after all legal and ethical standards are met is that consulting by its scientific and professional staff, to the extent that it does not interfere with their regular duties or responsibilities, is encouraged. A description of the nature of the consulting work, the source of funds, the time to be spent and the contract, especially patent agreements, are all required and must be approved by the Department Chairman, the Laboratory contractor legal counsel, and the Assistant Director for Scientific Personnel.

As I said at the outset, we welcome the opportunity to offer our comments on these issues, and hope you find our remarks helpful. I would recommend that you contact Dr. Jerome Hudis, our Assistant Director for Scientific Policy and Planning at 516-282-3336, concerning the follow-up meeting on this issue.

Sincerely yours,

Nicholas P. Samios

Dr. Nicholas P. Samios
Director

NPS:MCB:clm

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
Upton, Long Island, New York 11973
(516) 282-
FTS 666-7338
Office of the Director

April 9, 1982

Mr. Arthur A. Churm, Director
Office of Patent Counsel
U. S. Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

Dear Art:

On Friday, April 2, 1982, representatives of DOE and AUI held a prime contract negotiating session to discuss the patent provisions of the new contract. At this meeting, attended by Paul Gottlieb of your office, AUI presented a formal request that the provisions of Public Law 96-517 pertinent to the patent rights obtained by non-profit research organizations under Federal funding agreements be extended to AUI and be incorporated as the patent provisions of the new prime contract.

It is our understanding that the question of applying Dole-Bayh to the DOE national laboratories will be considered at the DOE patent conference next week. We are, therefore, outlining our request in this wire so that it can be considered, if appropriate, during your discussions.

Section 200 of P.L. 96-517 indicates in part that it is Congress' objective in enacting the legislation "...to use the patent system to promote the utilization of inventions arising from federally supported research or development..." This policy statement arose out of Congressional findings that the Government patent program followed previously, which basically called for the federal funding agency to take title, had failed to promote the development and commercialization of technology covered by Government-owned patents, a result that was clearly not in the public interest.

It is AUI's position that the application of Dole-Bayh to Brookhaven National Laboratory would result in a more effective transfer of technology developed at Brookhaven to the marketplace. As a basic, multi-purpose, non-weapons oriented research laboratory, Brookhaven would be the ideal choice for DOE to use as a test case to see if the application of Dole-Bayh to BNL, which would result in AUI retaining title to research results, would permit a more successful transfer of technology to the marketplace. Accomplishing this transfer of technology is at the core of all of the recent patent reform legislation.

We are hopeful that DOE will consider our request and structure our prime contract to establish an experimental Dole-Bayh program at Brookhaven, with provision for the evaluation of this program during the course of contract performance.

Sincerely,

Margaret C. Bogosian
Patent Counsel

RECEIVED
JUL 27 1982
BNL
PATENT OFFICE

THE WHITE HOUSE
WASHINGTON

July 21, 1982

Dear Senator McClure:

This letter presents the Administration's position on the provisions of S.1657, the "Uniform Science and Technology Research and Development Utilization Act," concerning rights to inventions resulting from research performed by Government-Owned Contractor-Operated (GOCO) entities.

The Administration strongly supports the approach to this issue embodied in S.1657. That Bill, as reported by the Senate Committee on Commerce, Science, and Transportation, provides GOCOs the first option to ownership of inventions made with federal support, unless "exceptional circumstances" dictate otherwise. This approach is consistent with the central thrust of this important legislation -- private sector ownership of rights to patents resulting from federally-funded research, unless such ownership is contrary to the national interest.

Although this approach reverses the long-standing patent ownership practice of DOE and its predecessor agencies, as well as that of some other agencies, we have concluded, after careful study, that there is need for the change reflected in S.1657.

Successful technology development and commercialization by the private sector are critical to efforts to revitalize our economy and enhance our international stature. To this end, the Reagan Administration is committed to removing barriers to, and providing incentives for, increased private sector technological innovation and productivity. The major thrust of S.1657 is to stimulate innovation and productivity in the United States by encouraging transfer of federal R&D results to the private sector for commercialization. We, therefore, support S.1657 as a means of enhancing this country's efforts to commercialize technologies, increase productivity, and contribute substantially to job creation. Because GOCOs represent a tremendous source of technological innovations with significant commercial potential, they should have every incentive to identify and transfer these innovations to the private sector. Patent ownership has proven to be a powerful incentive to innovation and commercialization of technology.

Those promoting retention of the present policy suggest it is necessary to maintain GOCO commitment to agency goals and prevent the possibility that GOCO ownership of inventions might diminish or distract from the performance of assigned tasks and lead to a conflict of interest. In our review, no such conflicts were identified in the performance of any long-term government R&D contracts where contractors retained ownership of government-funded inventions. Absent compelling arguments to the contrary, we believe it inappropriate to establish any sweeping exceptions to the general policy proposed by S.1657.

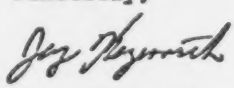
37-360 O—84——8

In those specific situations where government ownership of inventions by GOCOs is justified, S.1657 authorizes agencies to limit the rights of a contractor simply by determining "that there are exceptional circumstances requiring such action to better promote the policy and objectives" of the act (Section 301(a)(2). This is consistent with the policy established in Section 101(5), to "guarantee the protection of the public interest."

We hope that this discussion clarifies the Administration's strong support for Senate passage of S.1657, including its handling of the GOCO issue. We will be pleased to discuss this issue with you and your Committee further as required.

We are advised by the Office of Management and Budget that there is no objection to the submission of this report for your consideration and that the adoption of the recommendations made herein would be consistent with the program of the President.

Sincerely,



G. A. Keyworth
Science Advisor to the President

The Honorable James A. McClure
United States Senate
Committee on Energy and Natural Resources
3121 Dirksen Office Building
Washington, D.C. 20510

Scientific Staff Manual

Brookhaven National Laboratory

Office of Scientific Personnel
October, 1983

• OUTSIDE PROFESSIONAL EMPLOYMENT

The general propriety of members of Brookhaven staffs accepting outside professional responsibilities is recognized, but in each instance before any responsibilities of this sort are accepted, the following considerations must be weighed.

The primary obligation of all staff members is to carry out that part of the Laboratory's program for which they are directly responsible. Obligation is not merely to work during particular hours on particular days, but is professional in character and can be fulfilled only by positive accomplishment consonant with professional stature. As a corollary, every staff member is expected to take vacations to the extent necessary to enable performance of Laboratory duties with maximum effectiveness. Similarly, outside employment is expected to contribute to the staff members' effectiveness in their work at Brookhaven which is their primary obligation.

In considering an opportunity for outside employment, a staff member is expected to take account of accepted ethical standards and to act with due

regard for canons of professional ethics. Consulting should not be accepted from an organization (or, if the organization be very large, from any particular division of it) which engages in direct and substantial business dealings with the Laboratory, either as a vendor or otherwise, especially where these dealings are in a field closely related to the proposed employment; nor should any consulting arrangement be entered into with a firm or organization which is actively seeking business from the Laboratory. Under no circumstances should staff members participate in procurement negotiations with an organization with which they have any consulting connection, nor should they participate in the evaluation or appraisal for Brookhaven or DOE of some technical aspect of the work of such an organization. Similarly, the names of Brookhaven National Laboratory, Associated Universities, Inc., and the U.S. Department of Energy must not be used in connection with any outside employment.

Brookhaven National Laboratory derives its financial support from the Government of the United States through the contract between Associated Universities, Inc. and the Department of Energy. Although staff members are not employees of the government, but of Associated Universities, Inc., the government is the ultimate source of their compensation. Therefore, Brookhaven is, in a sense, a public institution, and all opportunities for outside employment should be viewed in the light of the following principles.

Staff members should not accept compensation for work which can fairly be regarded as a part of regular duties or responsibilities. Similarly, they should not accept compensation for doing individually work which the Laboratory, as a public institution, would expect to do for the employing organization or which is essentially a part of the Brookhaven program. Staff members shall not accept gifts or special favors from individuals or organizations with whom Brookhaven is doing business, or proposes to do business. It should be noted that acceptance of a gratuity may be a violation of United States Code, Title 41, Sections 51-54.

The spirit of the statutes forbidding dual compensation for government employees should be observed. Broadly speaking, these are directed at situations where the employee must try to serve two masters. More particularly, they forbid the acceptance of outside compensation for doing work for which the individual is already being paid directly by the Federal Government. In keeping with these principles, services to be rendered to the Department of Energy or to a DOE prime contractor normally should be performed as a part of the staff member's regular Laboratory duties and regulated by contractual arrangements made by the Laboratory management or possibly by interagency agreements. Therefore, except as expressly authorized in unusual cases, no staff member should accept compensation for services of this type. In seeking authorization, a complete disclosure of pertinent facts is essential. It may also be deemed appropriate to treat in similar fashion consulting services to be rendered to some government agency other than DOE or to a cost-type

contractor with such an agency. The particular circumstances in each such case must be given careful consideration.

No outside organization should be permitted to obtain a preferred position in learning the results of work at Brookhaven or other U.S. Department of Energy installations by employing members of the Brookhaven staff. For example, in performing services for an outside organization, staff members must not take advantage of information coming to them in the course of their employment at Brookhaven, unless this information is generally and readily available. Similarly, no arrangement for consulting services should be entered into with a firm whose business is in a field in which Brookhaven does or has done research, the results of which are not yet fully reported and in the public domain. In many cases, it will be difficult to distinguish between the imparting of information which is not generally available and the legitimate exercise of professional skill in the solution of a problem. Much must be left to the individual's sense of propriety.

Staff members shall not use for personal gain or make other improper use of privileged information acquired in connection with their employment. The term "privileged information" includes, but is not limited to, unpublished (i.e., not reported or in process of being reported through established procedures) information relating to technological and scientific developments; medical, personnel, or security records of employees; anticipated materials requirements or pricing actions; possible new sites for government or AUI-connected operations; and knowledge of selection of contractors or subcontractors in advance of official announcement.

The relationship of the Brookhaven staff member to any outside organization from which compensation is received should be that of an independent contractor. The acceptance of management responsibility or of any position creating a fiduciary relationship is undesirable. Again, disclosure of details is essential.

When the outside professional employment is to be done on the Laboratory site, as in the case of acting as editor or providing editorial assistance to a scientific journal or periodical, suitable arrangements must be made with the outside organization to compensate the Laboratory for the use of secretarial, and such other office services as may be required. Please note Section concerning *Adjunct Appointments and Editorships*.

Procedure. A staff member wishing to enter into an outside consulting arrangement or comparable employment service shall submit a request for approval on the form entitled, "Request for Consent to Engage in Outside Activity", copies of which are available either in Departmental offices, or the Office or Scientific Personnel. This form calls for a) complete information with respect to the terms of the proposed arrangement, b) a description of the organization seeking the services of the staff member c) complete information with respect to all other outside business activities which might be expected to

affect Laboratory work or involve some conflict of interest, and d) in the case of editorships or similar activities to be performed on site, information about arrangements to reimburse the Laboratory for secretarial assistance, telephone and other office services and the like. Copies of letters of intent or contracts for such services must be included with the request.

The completed forms should be submitted to the Department Chairman in time to permit adequate review, upon whose recommendation the form is transmitted to the Director's Office for approval. Notice of final action is given to the staff member and the Department Chairman.

Criteria for Approval. In determining whether to approve outside employment of a staff member, the policy consideration set forth above shall be considered, and the following administrative criteria shall also be applied.

In no event must outside employment, by consumption of time, or otherwise, be permitted to impair a staff member's usefulness to Brookhaven.

Outside employment during regular working hours must be covered by annual leave or leave without pay.

Laboratory facilites, equipment, and materials must not be used for non-Laboratory work. Such use would be a violation of Federal Law.

The method of compensation must be disclosed and will be considered in determining whether any actual or potential conflict with the staff member's regular employment exists. Thus, the staff member must not be obligated by a retainer or any other arrangement to be available upon request by an outside organization. Such an obligation would inevitably raise the possibility of substantial conflict with the prior and primary obligation to Brookhaven. Similarly, if the staff member has, or is to have a substantial proprietary or other immediate financial interest in the outside organization seeking consulting services, all the facts should be disclosed so that they can be weighed in determining the existence of a possible conflict with the staff member's primary obligation and with the public interest.

The source of support for the work in which the staff member will participate is an important consideration. As indicated above, in the statement of policy, if the work in question is to be paid for by a government agency, it should, as a general rule, be the subject of a contractual arrangement of some sort between the Laboratory and the outside firm, rather than a source of personal financial gain to the staff member, funds for whose compensation are already being provided by the government. This requirement is particularly applicable where the outside organization is a DOE cost contractor.

Care must be taken to prevent any impairment of DOE patent policy as set forth in the contract between AUI and DOE for the operation of Brookhaven National Laboratory and any patent agreement required to be signed by the staff member as part of a proposed consulting arrangement. The following paragraph is considered to provide adequate protection, and its inclusion in all outside consulting agreements, in substantially the form given, is required:

> "It is recognized that the Consultant, as an employee of Brookhaven National Laboratory, has executed an agreement requiring disclosure and assignment to the Department of Energy of inventions and discoveries made in the course of employment. If at any time a question arises whether an invention or discovery is subject to this agreement or to the Consultant's agreement with Brookhaven, the matter shall be submitted to the Department of Energy for determination, and the Department's decision shall be final and conclusive. For purposes of this agreement, the term "Department of Energy" shall mean the Department's Manager at Brookhaven or such other representative as it may designate."

The foregoing criteria are not intended to be all inclusive. Both the Department Chairman or Division Head and the Director are expected to exercise their best judgment in the light of all circumstances known to them in determining whether to give or withhold approval of a proposed consulting agreement.

A record of all outside consulting arrangements entered into by staff members is maintained by the Office of Scientific Personnel. This record will be brought up-to-date annually, and staff members will be expected to provide information on interim changes.

Honoraria. The handling of honoraria is a vexing matter cloaked in custom and privilege. In any case, honoraria are taxable as income, unless clear evidence can be produced that such payments are in lieu of and equivalent to expenses incurred in the activity. In accepting an honorarium from a private source, e.g., a university for giving a seminar, the recipient must ascertain whether it is in lieu of expenses or not and whether the source is the Federal government or not. If it is the government, the prohibition against dual compensation applies as described above.

It has become a widespread practice to offer honoraria for serving on review panels or boards and similar activities, for which no contractual relationship exists. The rule which only the individual can apply suggests accepting honoraria only if the duty is beyond that normally expected of the individual, whether in kind or duration. Sitting on a panel during a normal workday may be different than serving on a Saturday or Sunday. If the source of the funds is the government, or a direct contractor to the government, an honorarium cannot be accepted in the former case, but may be accepted for weekend service. The burden rests on the individual, since recourse to a fixed arbitrary institutional policy is not satisfactory in view of the variety of circumstances under which honoraria are proffered. Prudence suggests using leave, either vacation or without pay, or refusing the honorarium if any doubt exists.

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
Upton, Long Island, New York 11973

Office of the Director

(516) 282-
FTS 666-7338

April 4, 1983

Dr. James F. Decker
Office of Energy Research
Mail Stop 3F-032
U. S. Department of Energy
Washington, D. C. 20585

Dear Dr. Decker:

I am writing in response to your memorandum dated March 22, 1983, concerning the Technology Transfer Meeting that was held at DOE Headquarters in February. Dr. Jerome Hudis, Assistant Director for Scientific Policy and Planning at Brookhaven, and I attended the February meeting. We have both reviewed your draft report on this meeting and while we are in basic agreement with your summary of the session, we think there are several significant points that were raised at the meeting which should be reflected in your report.

The second question in Dr. Alvin W. Trivelpiece's letter of January 12, 1983, concerned possible royalties and fees for the Laboratories, and consideration of this question prompted a discussion at our meeting that recurred throughout the session. There were comments offered by representatives from both the industrial and university contractors to the effect that technology licensing and technology transfer programs require an investment of time and money on the part of the research facility with the risk that such investment will not result in any substantial economic gain. Throughout the discussions on this issue, the Laboratory representatives consistently came back to the same basic premise--the ultimate goal of a technology transfer program for the National Laboratories is to permit the commercialization of laboratory origin research by industry so that the American public can best benefit from the investment of tax dollars into Government sponsored research. This is the goal that we must focus on and we cannot and should not be diverted by placing too much emphasis on the income raising potential of technology transfer. If licensing does result in some royalty income, this, of course, is an added benefit, but the main thrust of the program is to maximize the utilization of Government funded research.

Another point that was raised in the responses by a number of the

Laboratories and which was discussed at length at the meeting, was the question of giving the National Laboratories the option to retain title to inventions of their employees. The responses to Dr. Trivelpiece's January 12, 1983, letter submitted by Argonne, Berkeley, Brookhaven, Stamford, Princeton, and Los Alamos all specifically suggested that one regulatory or DOE policy change that would enhance the Laboratories' ability to transfer technology to industry for possible commercialization would be to permit the Laboratories rather than DOE to retain title to inventions and patent rights. The Stamford recommendation, found at page 3 of Dr. Wolfgang Panofsky's letter of January 24, 1983, calls for the "...elimination of the retention by DOE of title to patents, and granting of title to the university in consonance with the intent of P.L. 96-517..." The response from Dr. Donald Kerr of Los Alamos National Laboratory in his letter of January 27, 1983, contains a similar proposal:

> Several specific changes, clarification or expositions of policy would contribute to a strengthening of the Technology Transfer process in the licensing area or in more general collaboration with industry:
>
> - Make Laboratory inventions programmatically available for licensing.
>   - The Bayh-Dole Bill (PL 96-517) could be exercised to waive patent rights to university and nonprofit operators of GOCO facilities.

Discussion of these recommendations at the meeting led to what appeared to be unanimous consent by the Laboratories that: 1) Laboratory retention of title to inventions would probably enhance the ability to transfer such inventions to industry; and 2) the necessary changes should be made in DOE policy, regarding application of the Dole-Bayh Bill to university and non-profit GOCO contractors, and regulations, regarding industrial GOCO contractors, to permit these contractors to have the option to retain title to in-house inventions. This was perhaps the most significant concensus reached by the Laboratory representatives and should be reflected in the report on the meeting.

As we have indicated to you in the past, we welcome the opportunity to participate with the Department in the construction of a meaningful and effective technology transfer program, and we hope the comments offered above will be helpful.

Sincerely,

Margaret C. Bogosian
Patent Counsel

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
Upton, Long Island, New York 11973

(516) 282-
FTS 666- 7338

Office of the Director

May 25, 1984

Senator Robert Dole
Patents, Copyrights and Trademarks Subcommittee
Senate Judiciary Committee
SD-137 Dirksen Senate Office Building
Washington, D.C. 20510

Re: Senate Bill S. 2171

Dear Senator Dole:

I am writing in response to your letter of April 6, 1984, in which you requested that we submit written comments to supplement the oral and written testimony we have presented before the Senate Judiciary Committee, Subcommittee on Patents, Copyrights and Trademarks, concerning S. 2171. The following remarks reply to the series of questions enclosed with your April 6th letter.

I. Question 1, part one

As we indicated in our testimony on S. 2171, we have experienced very little success in being able to work effectively with industry in transferring technology developed at Brookhaven to the private sector. It is our opinion that the present patent policy in effect at the Department of Energy, which is reflected in the provisions of our prime contract with DOE, requiring that DOE takes title to all inventions made at the Laboratory under Government funded programs, creates an almost insurmountable barrier to our ability to deal effectively with industry.

In order for industry to make the commitment to invest additional funds into the development and marketing of any technology, they must have some assurance that the rights they have acquired in this technology afford them a chance to recover their investment. In most instances, industry will require either outright ownership of the technology or an exclusive license from the patent owner that gives the industrial concern exclusive manufacturing and/or marketing rights. Since, under the current DOE patent policy, Brookhaven cannot take title to technology developed at the Laboratory, it is impossible for us to negotiate licensing rights with interested industrial concerns.

The licensing provisions that were contained in Public Law 96-517 theoretically enable DOE to grant exclusive licenses to industry under inventions made at Brookhaven. However, the regulations that were written to implement Public Law 96-517 are cumbersome and it has been our experience that industrial concerns are not even interested in going through the procedures required by DOE in order to obtain an exclusive license. In point of fact, over the last four fiscal years (1980-1983), eighty-three (83) inventions were

developed at Brookhaven National Laboratory that are the subject of U. S. patents or patent applications owned by DOE. DOE has not granted one exclusive license to private industry under any of this technology. Actually, DOE has never exclusively licensed any work developed at the Laboratory.

II. Question 1, part two

Brookhaven National Laboratory does not conduct any classified or weapons research, so that it has never been necessary for us to file a patent application on a classified invention. However, we are not aware that ownership of a classified invention by an entity other than the Federal Government would present any problem. Section 107 of the Manual of Patent Examining Procedure defines the Patent Office's internal operations concerning classified inventions. It describes two separate procedures, one for cases where the invention is one not owned by the Government, and the other for cases where the invention is owned by the Government. Section 107 seems to provide adequate protection of national security concerns in instances where the Government does not own the classified invention.

III. Question 2, part one

There is no question that our inability to freely negotiate with potential industrial partners concerning rights in technology developed at Brookhaven greatly impedes our ability to transfer such technology and adds an enormous element of frustration to the Laboratory in its efforts to assure utilization of valuable technology resulting from our research programs. Certainly we try to devote our best efforts to our technology transfer programs, but it is sometimes difficult to foster enthusiasm among the inventors or research administrators at the Laboratory when they are well aware that DOE's patent policies greatly inhibit anything meaningful resulting from our contacts with industry.

IV. Question 2, part two

Efforts to transfer technology developed at Brookhaven, which efforts entail not only finding an industrial firm interested in commercializing particular inventions, but also include dissemination of research results, collaborative work with visiting scientists, and providing experimental time at Brookhaven user facilities for guest scientists, do not detract from, but in fact enhance the mission of the Laboratory and the mission of the Department of Energy in funding the Laboratory. Primarily, Brookhaven is a basic research Laboratory which conducts a broad range of research programs in the physical and life sciences, with particular emphasis in the field of high energy physics research. Our research programs involve experimental work, theoretical work, and the design and construction of large scale research tools such as particle accelerators, nuclear reactors, and ultraviolet and x-ray light sources, which are used by a broad community of industrial and academic scientists.

Current policies enable us to disseminate information produced by our basic research efforts and these policies greatly foster technological advancement in this country. On the other hand, if our research in the more applied areas results in technology that may have commercial application, the national economy and the individual taxpayers would be best served if this technology were transferred to the private sector, so that it could eventually result in a new and useful marketed product. The value of the latter type of technology transfer effort was recognized by Congress in the passage of Public Law 96-517 (Dole-Bayh), and Public Law 96-480 (Stevenson-Wydler).

V. Question 2, part three

To date, the Department of Energy, Office of Energy Research, has strongly supported the general concept of technology transfer at Brookhaven. In fact, they have provided encouragement to Brookhaven's Office of Research and Technology Applications, established pursuant to the requirements of Public Law 96-480.

VI. Question 3, part one

In February 1983, Dr. Alvin Trivelpiece, Director of the Office of Energy Research, U. S. Department of Energy, hosted a meeting on technology transfer. Prior to this meeting, Dr. Trivelpiece requested the Directors of each of the DOE National Laboratories to submit responses to a series of questions on technology transfer that his office had prepared. These questions dealt with issues such as institutional impediments to technology transfer and DOE/Contractor regulations that inhibit technology transfer. In the written testimony we submitted to your Subcommittee concerning S. 2171, we included a copy of our February 1, 1983, letter to Mr. James Decker, Dr. Trivelpiece's assistant, in which we responded to these questions. In our February 1st letter, we offered extensive comments concerning the DOE patent system and its negative impact on our technology transfer capabilities. All of the other DOE laboratories, like Fermi, Livermore, Berkeley, etc., also submitted written comments. A summary of the comments from all of the laboratories was prepared by Pacific Northwest Laboratory, operated by Battelle. A copy of this summary, which appears in our written testimony, is attached hereto. You can see that a majority of the laboratories identified DOE's patent policy as a major impediment to technology transfer and recommended that leaving title to inventions in the contractor would promote technology transfer.

VII. Question 3, part two

We cannot not speak for DOE on this question and are not aware of any information DOE may have gathered concerning the impact of successful technology transfer on the creation of new businesses.

VIII. Question 4, part one

As we discussed in our written testimony, both the Report of the White House Science Council (Packard Report) and the Report of the Multi-Program Laboratory Panel of the Energy Research Advisory Board (ERAB Report), recommended policy changes in the DOE patent policies in order for the technology transfer programs at the National Laboratories to be successful. After these reports were issued, Dr. Trivelpiece did host the meeting I referred to above in February of 1983. However, neither the reports nor the DOE technology transfer meeting have resulted in any change in DOE's patent policies or procedures relating to the handling of technology developed at Brookhaven, nor has DOE permitted any increase in Brookhaven's management capabilities concerning these inventions.

IX. Question 4, part two

There is no question, the public would be better served if S. 2171 were passed because this would provide a mechanism to increase utilization of technology developed at the National Laboratories.

X. Question 5

After the passage of Public Law 96-517, Brookhaven wrote to the Department of Energy and requested that its prime contract, which was under negotiation at the time for renewal, be revised to apply the provisions of Dole-Bayh to the Laboratory. In our request to DOE we indicated that such a change in our contract would result in more effective transfer of technology developed at Brookhaven. A copy of our letter to DOE is included in our written testimony. DOE never responded to our request and reissued our prime contract with the old patent provisions, giving DOE title. As far as we know, DOE has chosen not to apply the provisions of Public Law 96-517 to any of its National Laboratories.

TECHNOLOGY TRANSFER, DOE LABORATORIES*

Lab	What is the Laboratory doing to effect Technology Transfer?	If allowed to retain fees and royalties, how much collected in last 10 years?	Structure of T^2 program?- a) incentives for lab and inventor; b) mechanism for patent licensing; c) encouragement of inventor/entrepreneurs; d) safeguards for lab mission.	Institutional impediments?- a) time to file for a patent; b) review process for patent applications; c) impediments to licensing or selling patents and copyrights (particularly for software) d) restrictions on consulting.	DOE, Government and contractor regulations and policies that should be changed to promote T^2?
Sandia	1 3/4 % of budget for T^2 activities.	Legal expenses + up to $3 - 4M/yr.	T^2 part of lab mission; patent rights to lab; self generated; CDI.	DOE owns patents; Ltd. consulting (state and local government).	Encourage exclusive licensing.
Ames	ORTA; technical appa. assessment; liaison with state agencies; publications; user facilities; graduate research ass'ts.	$M's/yr.	T^2 is mgmt. responsibility; publication, consulting, industry and government interaction; patents.	Time, disclosure to filing: 15 - 18 months; publications review by DOE; preference for small business & non-profits; reduces commercialization potential; consulting on off hours only.	Permit use of DOE facilities for others; liberalize patent & licensing policy; provide incentives to labs & inventors.
LBL	ORTA; publication; workshops; training.	$20 - 40M	Verify commercialization of lab technology; patent incentives to staff; patent rights to lab for transfer to industry; safeguards to assure objectivity.	Time, disclosure to filing: 1/2 - 1 yr.; publications review by LBL; DOE owns patents, consulting permitted.	Allow contractor ownership of patents; reduce time delays in filing and licensing; liberalize work for others policy; liberalize consulting regulations.
ORNL	ORTA; technology appa. assessment.	$50M	Assess, publicize, provide technical support; staff incentives.	Time to file: 3 - 6 months; publications review by U.C.; DOE owns patents; consulting permitted.	Allow labs and employees to retain royalties; provide monetary awards for patents; liberalize consulting rules; encourage exclusive patent rights; allow joint bidding with industry; support "adaptive engineering."
SLAC	Info. exchange; publication; office of Technology Licensing.	Basic research; not applicable.	Cf. pamphlets describing Stanford T^2 program.	Time for filing: high; publications review by SLAC; DOE owns patents; consulting permitted.	Eliminate DOE ownership of patents; promote information interchange with foreign nationals.
ANL	T^2 conferences - industry, university, local gov't.; work for others.	Many inventions; modest income.	Apply income to disc. research & inventor rewards; mktg. efforts by labs; patent rights to inventors.	Time to file: like industry; DOE owns patents; protection for software now possible; consulting permitted.	Increase flexibility in granting waivers and in subcontracting.
PNL	Stevenson-Wydler activities (ORTA); public meetings; publication; Use Permit.	Not applicable.	Income sharing with inventors (96-517); licensing program; encourage inventors; safeguard against CDI.	DOE owns patents; publications review by BNW.	Define objectives of specific T^2; source of funds; who manages.
Fermilab	Ind. affiliates program; publication; technol. assessment.	Not applicable.	Cf. Q-1; staff interaction with industry.	Patenting process - 3 years; review - DOE; ltd. consulting.	Loosen requirements on competitive bidding and publication of technical reports.
LLNL	ORTA; app. assessment; liaison with industry & local gov't.; work for others.	Not applicable.	Separate T^2 org.; use license income for adaptive eng.; offer alternative employment choices; Lab. Director responsible for non-interference with lab mission.	Time for filing: 1 year; review - acceptable; difficulties in DOE waivers and excl. licensing.	Allow all rights to sponsors in "use for others" project.
PPPL	Inventor recognition; publication; conferences; Utilities Advisory Council; Ind. Training Program.	> $1M	Invention awards; patent rights to lab; income to lab & shared with inventors; resp. for Lab mission assigned to PPPL Program Comm.	Review and filing by DOE; DOE owns patents; difficulties in granting waivers; consulting permitted.	Provide a financial stake for lab and staff in DOE inventions.
LANL	Staff exchanges with industry; work for others; patent waivers; conferences.	$3 - 5M	Staff-industry interaction; idea inventory & evaluation; patent filing; mktg. (by outside org.); financial incentives to lab and inventors.	Time for filing: 6 months; DOE ownership; consulting permitted.	Provide greater rights to GOCO contractors; reduce time for excl. licenses and waivers; establish more flexible DOE policy on licensing and on industry collaboration; liberalize policy on work for industry.
Gould	Recommends outreach program to identify prospects and communicate process to T^2.	No response.	Staff-industry interaction; inventor awards; open house activities.	No response.	No response.
BNL	ORTA; app. assessment; liaison with local gov't.; inventors' workshops.	Not applicable.	Patent rights to lab; reduce time for waiver/license from DOE; royalty sharing with inventors.	Time for filing: (by BNL; no delays); DOE ownership of technology; consulting permitted.	Allow lab to retain title to inventions, and inventors to share income from licensing.

*Laboratories' responses to letter of Alvin W. Trivelpiece, Director, Office of Energy Research, January 12, 1983.

Senator DOLE. Dr. Yates.

STATEMENT OF EDWIN T. YATES

Dr. YATES. Mr. Chairman, my name is Edwin Yates. I am the patent management officer of the Johns Hopkins University. It is my pleasure to be here today to testify on the Uniform Patent Procedures Act of 1983.

My testimony will be from the perspective of a university patent manager. As such, my experience predates passage of Public Law 96-517, the University and Small Business Patent Procedures Act of 1980. Prior to enactment of this law, it was necessary for a university that did not have an Institutional Patent Agreement with a particular agency to petition on a case-by-case basis for rights to inventions made with funding by that agency. With the passage of Public Law 96-517, small businesses and nonprofit institutions have the first right, with a few exceptions, to elect to take title to inventions made in the performance of research under Government grants and contracts regardless of the agency. Needless to say, this has had a stimulating effect on the transfer of technology from the university laboratory to the industrial sector and ultimately to the marketplace.

The Uniform Patent Procedures Act of 1983 would basically extend the benefits of Public Law 96-517 to all Government contractors including big businesses conducting research under Federal grants and contracts. Presently, title to inventions made by big businesses under Government contracts go to the Government. In view of the small percentage of Government-owned inventions that are ever licensed, it would seem that the public would benefit if big businesses were to acquire title to inventions made with Federal funds. The company would have a profit incentive to make the investment necessary to develop the invention to the commercial stage. Thus, Federal research money would generate improved products and processes to benefit the public rather than inventions that are never exploited commercially.

In addition to the foregoing, there are a number of provisions of S. 2171 which are directly beneficial to universities in their effort to transfer technology.

For example, Public Law 96-517 excepts from university ownership inventions made at Government-owned laboratories that are operated by universities. S. 2171 would repeal that section of Public Law 96-517 and provide that universities as well as other qualified contractors operating Government-owned laboratories would obtain title to inventions made in these laboratories.

Colleges and universities are more and more frequently entering into collaborative efforts with industry. A big concern of industrial sponsors of academic research is that Federal money will become mixed with theirs in funding the research, and if an invention is made, the Government would have rights to it.

The present bill amends Public Law 96-517 to permit Federal agencies to waive any of the conditions that attach to the ownership of inventions resulting from cosponsored, cost-sharing, or joint venture research. This provision permits the agency to waive, for example, its march-in rights and its rights to a nonexclusive li-

cense. The waiver of such conditions would give colleges and universities greater flexibility in structuring collaborative projects and would encourage university-industry collaboration.

A final point I want to discuss relates to the period of exclusivity that a university can grant in a license under an invention made with Government funding. Under present law, the period of exclusivity which a university can grant in a license under the U.S. patent rights to other than a small business is limited. The period of exclusivity may be no longer than the earlier of 5 years from the date of first commercial sale or 8 years from the date of the license. This provision is a significant barrier to licensing inventions that require long periods of development and the expenditure of large sums of money prior to commercialization. This is particularly the case with drugs, where millions of dollars may be spent and 7 to 10 years may elapse before market approval is obtained from the Food and Drug Administration. Prospective licensees are understandably concerned that, after having made such a commitment of time and money, they have a sufficiently long period of exclusive marketing to recover their investments.

This problem is remedied by Senate bill 2171, which amends Public Law 96-517 by removing the cap on the period of exclusivity which can be granted to a big business under U.S. patent rights. Removal of this cap will, in my opinion, serve to foster technology transfer to the ultimate benefit of the public.

That concludes my comments. Thank you for the opportunity to be here before you today.

Senator DOLE. Thank you.

[The following statement was received for the record:]

Prepared Statement of Edwin T. Yates

Mr. Chairman and members of the Subcommittee, my name is Edwin T. Yates. I am the Patent Management Officer of The Johns Hopkins University. It is a pleasure to be here today to testify on the Uniform Patent Procedures Act.

My testimony will be from the perspective of a university patent manager. As such, my experience predates passage of Public Law 96-517, the University and Small Business Patent Procedures Act of 1980. Prior to enactment of Public Law 96-517, it was necessary for a university that did not have an Institutional Patent Agreement with a particular agency to petition on a case-by-case basis for rights in inventions made with funding by that agency. With the passage of Public Law 96-517, small businesses and non-profit institutions such as colleges and universities have the first right, with a few exceptions, to elect to take title to inventions made in the performance of research under Government grants and contracts regardless of the funding agency. Needless to say, this has had a stimulating effect on the transfer of technology from the university laboratory to the industrial sector and ultimately to the marketplace.

The Uniform Patent Procedures Act which is being discussed today would basically extend the benefits of Public Law 96-517 to all Government contractors including big businesses conducting research under Government contracts. Presently, title to inventions made by big businesses under Government contracts go to the Government. In view of the small percentage of Government-owned inventions that are ever licensed, it would seem that the public would benefit if big businesses were to acquire title to inventions made with Federal funds. The company would have a profit incentive to make the investment necessary to develop the

invention to the commercial stage. Thus, Federal research money would generate improved products and processes to benefit the public rather than inventions that are never exploited commercially.

In addition to the foregoing, there are a number of provisions of the Uniform Patent Procedures Act which are directly beneficial to universities in their efforts to license inventions made with Federal funding. For example, Public Law 96-517 excepts from university ownership inventions made at Government-owned laboratories that are operated by universities. This Bill will repeal that section of Public Law 96-517 and provide that universities, as well as other qualified contractors, operating Government-owned laboratories will obtain title to inventions made at these laboratories.

The implementing regulations for Public Law 96-517 were developed with significant comment from colleges and universities. The resulting regulations contain favorable provisions for reporting inventions made under Federal grants and contracts to the Government. However, the regulations are subject to a policy review in approximately another year and the present reporting provisions could be changed. The Uniform Patent Procedures Act amends Public Law 96-517 to insure that these favorable reporting provisions will survive even if the present implementing regulations are rescinded or changed in the future.

Colleges and universities are more and more frequently entering into collaborative research efforts with industry. A big concern of industrial sponsors of academic research is that Federal money will become mixed with theirs in funding the research and, if an invention is made, the Government would have rights to it. The present Bill amends Public Law 96-517 to permit Federal agencies to waive any of the conditions that attach to the ownership of inventions resulting from co-sponsored, cost sharing, or joint venture research. To justify a waiver in such cases, the agency must determine that it is in the

37-360 O—84——9

public interest. This provision permits the agency to waive, for example, its march-in rights, its right to a non-exclusive license, and its right to require reports on commercialization. The waiver of such conditions would give colleges and universities greater flexibility in structuring collaborative projects and would encourage university-industry collaboration.

The final point I want to discuss relates to the period of exclusivity that a university can grant in a license under an invention made with Government funding. Under Public Law 96-517, the period of exclusivity which a university can grant in a license under the U. S. patent rights to other than a small business is limited. The period of exclusivity may be no longer than the earlier of five years from the date of first commercial sale or eight years from the date of the license. This provision is a significant barrier to licensing inventions that require long periods of development and the expenditure of large sums of money prior to commercialization. This is particularly the case with drugs where millions of dollars may be spent and seven to ten years may elapse before market approval is obtained from the Food and Drug Administration. Prospective licensees are understandably concerned that, after having made such a commitment of time and money, they have a sufficiently long period of exclusive marketing to recover their investments.

This problem is remedied by the Uniform Patent Procedures Act which amends Public Law 96-517 by removing the cap on the period of exclusivity which can be granted to a big business under U. S. patent rights. Removal of this cap will, in my opinion, serve to foster technology transfer to the ultimate benefit of the public.

That concludes my comments. Thank you for the opportunity to appear before you today.

STATEMENT OF PHILIP V. LIVDAHL

Senator DOLE. Mr. Livdahl.

Mr. LIVDAHL. I am Philip V. Livdahl, associate director and deputy director of Fermi National Accelerator Laboratory, which is more commonly known as Fermilab.

Fermi National Accelerator Laboratory, commonly known as Fermilab, is a Department of Energy-owned facility. It is managed by a consortium of universities called the Universities Research Association, Inc., or URA. The Laboratory is principally devoted to the study of high energy physics. The experiments utilize protons which have been accelerated to an energy of 800 billion electron volts by a new superconducting accelerator, to investigate the fundamental nature of matter—that is, the quarks and leptons which are now thought to be the fundamental constituents of matter. The new accelerator, called the energy saver—or now, the Tevatron—uses the phenomena of superconductivity, which is the characteristic of some exotic alloys to conduct electricity without resistance when cooled to very low temperatures, on an unprecedented scale. It takes a great deal of very high technology to build such a device as well as to carry out the sophisticated experiments which use the protons from the accelerator.

In developing the new accelerator, Fermilab has evolved significant industrial interactions in as diverse fields as microelectronics, low temperature refrigeration and superconductivity. We have also actively carried on an ever increasing program of technology transfer. This program was initiated by the formation of Fermilab Industrial Affiliates which has gained a surprisingly diverse array of corporate members ranging from very large—GE and IBM—to very small (Omnibyte and Digital Pathways) corporations.

In all of these interactions, we have sensed that a factor which inhibits the pursuit of patents by our employees in collaboration with industry is the patent policy to which our contract with the Department of Energy requires that we comply. What is the incentive on the part of our staff to go to the extra work required to apply for a patent under the present conditions?

As a DOE-GOCO, our patent policy is required to be the Department of Energy policy. The Department's principal interest is the protection of the U.S. Government from having to pay royalties for the use of patents which result from work performed under Government sponsorship. This is a worthy objective and one which we wholeheartedly support but the objective can be achieved as well by other mechanisms. Where is the initiative in the present mode of operation to push patents to a point of marketability? I believe that the interests of the U.S. Government will be best served by allowing contractors to own patents which are developed in pursuit of their work.

I enthusiastically support the objectives of S. 2171. I am not a lawyer, a semanticist, or a lawmaker, but I respectfully ask if the committee is satisfied that section 215 (a)(3) cannot be interpreted by the agencies to prevent the bill from having the desired effects.

In almost every way Fermilab, as I have mentioned earlier, has the characteristics of a research university. None of our research is classified, the contracting organization is a consortium of universi-

ties, and our users are almost entirely university faculty. From this point of view we feel that our laboratory should, at the very least, have the rights recently granted to the universities by the Presidential memorandum.

Thank you for the opportunity to speak concerning this important matter.

Senator DOLE. Thank you.

[The following material was received for the record:]

PREPARED STATEMENT OF PHILIP V. LIVDAHL

I. FERMILAB

Fermi National Accelerator Laboratory, hereafter called Fermilab, welcomes the opportunity given by bill S2171 which is before this committee to own the patents it develops. I believe that in the hands of the laboratory, the patents will get the most direct and useful exploitation possible for the public good. For you to better understand that statement I must first tell you something about Fermilab and technology transfer from the Laboratory.

Fermilab, 30 miles west of Chicago, operates the most powerful accelerator in the world. This accelerator is used to investigate the fundamental nature of matter, the quarks and leptons that we are made of. It uses superconductivity, the ability of some materials to conduct electricity without resistance, on an unprecedented scale. It takes a great deal of very high technology to build an accelerator like the one at Fermilab and to carry out sophisticated experiments of this sort.

Fermilab is a Government-owned, contractor operated facility (GOCO) managed by a university consortium, named the Universities Research Association, Inc, or URA. This consortium comprises more than fifty of the largest research universities in the United States. More than eighty percent of the research at Fermilab is done by university faculty members; often they are working in teams comprising several universities and members of the Fermilab staff.

Industry has an active stake in the Laboratory. One part of this is the technology transfer process whereby Fermilab specifications are met by high technology vendors only after considerable effort, usually collaborative, between the Laboratory and industry. The result is often a new product or a new skill leading to a new product. I should note that this standard type of technology transfer probably accounts for an over all payback which is a significant fraction of the annual budget of all the basic research laboratories. An example of such a collaborative effort has been the development of the superconducting wire now used in the Fermilab accelerator. That wire development has involved a complex of several industries - alloy, wire and cable manufacturers. The wire is now used in a variety of other applications extending beyond our specialized needs.

Industry interacts with us in another way. In 1980 we formed a group called the Fermilab Industrial Affiliates. That organization now numbers more than thirty companies interested in the technology at Fermilab. These companies range from large companies such as IBM, Bell Laboratories and Shell Oil to small companies directly concerned with our work, such as Omnibyte, Digital Pathways and NYCB Real-Time Computing. Why are companies interested in joining the Fermilab Industrial Affiliates? Mostly they seem to want status information on the work going on at the Laboratory, a general review that keeps them abreast of the field. We handle this by holding a comprehensive annual meeting at which the current work at the Laboratory is aired and distributing monthly reports to the companies based on their own particular interests. Many of the Affiliates also recognize Fermilab as a watering hole where they can come and share information, often information transcending Fermilab. A place like Fermilab is a useful forum since it is unfettered by the concerns of national security or a particular competitive sales posture. Last year many companies came to the Laboratory to talk about research and development of super computers in a situation where they did not have to reveal their own proprietary interests.

Because the nature of the work at Fermilab is directed toward basic research we have not in the past developed many patents. Part of this is because much of the work does not lend itself to patenting. On the other hand, our fundamental patent strategy may be at fault. Why then are we interested in having the rights to our patents? To answer this I have to talk a little more about the technology transfer process as we see it.

II. TECHNOLOGY TRANSFER

One form of transfer is the joint development of technology that I have already mentioned. This can lead to a new superconducting wire or a powerful new integrated

circuit chip. Another transfer mechanism is through the migration of personnel to more applied fields. This happens both when Fermilab staff leave to join these operations and when many of the graduate students trained in the research work at Fermilab find jobs in applied fields. Recent examples of personnel migration in this spirit are to switching system development at Bell Labs, seismic oil exploration, and medical imaging where large superconducting magnets are used. A third method of learning about the Laboratory is through publications and papers presented at meetings based on the work of the Laboratory.

All of these techniques are great methods for transferring broad general concepts. They are extremely important and we feel we do them very well. Parenthetically I believe that any restrictions that would hamper this process would have a grave effect on technology growth in the United States.

III. WHY WE NEED THE PATENTS

None of these processes have the protection of patents or licensing. After several years of discussion we now realize industry needs this protection to exploit specific ideas that may arise. The Fermilab patent strategy has basically been determined by the U. S. Department of Energy. They handle all matters of patenting for the Laboratory. It is our perception that they are most interested in protecting the government from the need to pay royalties for technology that it developed. We concur in this but beyond this we believe that the GOCO contractor should have ownership of any patents deriving from work at this Laboratory. Given this, we believe we can begin a process of greatly accelerating the process from idea to commercial application. What is missing from the current Fermilab policy is a market strategy.

Many universities have now come to grips with this same problem, often by hiring organizations such as University Patents, Inc. These patent and marketing organizations are able to judge marketability of specific ideas and find ways to exploit these ideas. This type of expertise has no natural home either in our Laboratory or for that matter in the Department of Energy.

It is that kind of expertise that we should seek out. Once we have the rights to patent licenses we will be able to approach outside marketing and licensing experts with a much more powerful inducement to become interested in our work. Our new strategy would be to identify projects with incipient commercial potential early in their development. Those ideas that survive such screening would be examined by professional consultants as to their potential commercial worth. Acting on their advice, the contractor, URA in our case, would apply for the patent, after U. S. Department of Energy review. We would then have every incentive to assign these for commercialization. The end result will be new products, greater incentives for the invention and a new source of funding to enhance our research program.

SUMMARY

We want Fermilab to have the opportunity to be able to hold the licenses and patents obtained due to development work done at the Laboratory. Fermilab and its governing organization, URA, should be free to make whatever arrangements are best for exploiting those patents for the public good. In particular, we would handle questions of invention awards and incentives to the individuals that originated the ideas. We would, of course, follow all relevant government guidelines in these matters.

With these rights we would behave very much like a university with thirty-five percent of our patents going on to commercialization rather than a national laboratory with only five percent being commercialized.

Practically, we are asking for the same rights that have been granted universities and non-profit organizations by the recent presidential memorandum.

Thank you for this opportunity to express our feelings about this important matter.

RESPONSES OF PHILIP V. LIVDAHL TO WRITTEN QUESTIONS OF SENATOR DOLE

Question. In your opinion can the labs work with industry effectively under the present restrictive patent policies—why not? Is ownership of a classified invention a problem during the period it is being maintained under a Secrecy Order in the Patent Office?

Answer. Fermilab works effectively with industry on many R&D issues that are outside of general patent questions. It is clear to us that accessibility to Fermilab inventions under the present DOE patent policy is a strong constraint on potential use by industry.

Since there is no classified work done at Fermilab, we cannot comment on secrecy orders.

Question. Would a lab use its best efforts to transfer technology if it cannot freely negotiate with industry? Will such efforts detract from the mission of the agencies? Has Washington's involvement in technology transfer from the labs been helpful or harmful to your efforts?

Answer. In the case of Fermilab, we feel that we have devoted a great deal of thought to the transfer of technology. It is our observation that the department's interest has been neutral other than requiring additional reporting of what and how we go about transfer of technology.

Question. I understand that DOE obtained information from the labs on obstacles to your transferring technology successfully—are patent rights a major or minor part of this problem? Does DOE have any information on the impact that successful tech transfer could have on creating new businesses?

Answer. Patent rights are a significant obstacle to technology transfer.

DOE is familiar with the problem and their attitude toward getting patents is often useful.

Question. The Energy Research Advisory Board report on the DOE labs criticized "micro-management" by the Washington bureaucracy as one of your major problems. The report was particularly critical of DOE patent policies and procedures. Has there been any change resulting in increased lab management of inventions since this report issued? In your opinion is the public receiving the full benefits they deserve from the $17 billion being spent this year on the lab?

Answer. There has been no change in DOE patent policies since the ERAB report was issued that can be discerned by Fermilab. Universities using the Laboratory have been given class waivers so their situation has been somewhat ameliorated, although the DOE required patent agreements used in connection with experiments done by universities are now much more complex than before.

Fermilab cannot answer the question of full benefit to the public for the entire $17 billion appropriated for government sponsored research activities, but we feel that those funds appropriated to the Office of Energy Research (about $1 billion) have, and will continue, to yield huge benefits. This benefit will increase by an evolving liberalization of DOE patent policy.

Question. Public Law 96–517, which I co-authored, specifically amended the DOE statute to permit the Department to extend patent ownership to nonprofit operators of the labs. To your knowledge has the Department acted on this authority?

Answer. To this time, no action has been taken within the Department of Energy to extend patent ownership to non-profit DOE contractors other than universities. It is my understanding that DOE is still considering possible further actions in this area.

Question. The present law requires universities to share royalties with employed inventors. Do you feel that such a policy is appropriate for the national labs? Should language be added to the Act on this? Is there any other incentive for a laboratory inventor to work for the commercialization of their invention?

Answer. Fermilab feels that the present law relative to university ownership of patents and sharing of patent royalties with inventors should also be extended to the national laboratories. No other mechanism can be expected to provide strong incentives to patent inventions. In assuming the responsibility for ownership of patents, the laboratory must avoid the tendency that could develop for the desire for patents to distort the research mission.

Senator DOLE. If it is satisfactory with the panel, you may get a letter from us with some written questions, and if you would answer them for the record.

Mr. Lukasik.

STATEMENT OF FRANK A. LUKASIK

Mr. LUKASIK. My name is Frank Lukasik.

I am chief patent counsel with the Air Force Systems Command at Andrews Air Force Base.

Senator DOLE. Let me suggest, because I have Senator Baker trying to drag me out of here right now, that the next witnesses please summarize your statements, and we will make them part of the record. We can always call you back, but we do not want to call you back and inconvenience you, but we really need to move along. I do not want the other panel to have to wait until 3 o'clock, which would be my next opportunity. So if you could summarize very quickly, I would appreciate it.

Mr. LUKASIK. Yes, Mr. Chairman.

The Department of Defense has not cleared my prepared statement as a representative of the view of DOD and of the Air Force. Accordingly, that statement and my views today are my own personal views and not necessarily those of DOD or the Air Force.

In my prepared statement, I have compared the impact of patent and data rights policy on the procurement of spare parts and technology transfer in general. Although not directly related to S. 2171, I would like to express my appreciation of Secretary Orr's deep interest in data rights issues, which has focused on the intellectual property area, an area that has been neglected for many years. A recent study by the Air Force Management Analysis Group, of which I was a member of the team, put the issue of data rights into context within the total spares acquisition process and illuminated this problem area. As a member of the AFMAG team, I examined the relationship between establishing Government rights in patents and establishing Government rights in technical data. Figure 1 of my prepared statement is an illustration showing what I believe to be the relationship between the new technology being developed at government expense and the right to intellectual property arising from research work.

Under the current patent rights clause of the defense acquisition regulation and the FAR clauses, much of the contractor invention followup is routine paper shuffling between the contractor, the administrative contracting officer and the patents officer. It is this procedure, with its resulting paperwork, which may be reduced if the short form or OMB Circular A-124 clause were used. We can then concentrate on establishing Government rights in new technology, through our review of technical data, determine whether the item, component, or process was developed at Government or private expense.

With full implementation of the Bayh-Dole bill and enactment of S. 2171, the Government's rights will be established by law, and the contract need only be concerned with the reporting requirements contained in the laws. When this bill, S. 2171, is passed, I would hope that OMB would also take another look at A-124 and reduce the reporting requirements to only those requirements actually specifically mentioned in the act.

We are hoping that with the new incentives for filing patent applications contained in the bill, and new procedures for establishing rights in data contained in the AFMAG report, that contractors

will be incentivized to utilize the patent system instead of relying on trade secrets to protect their new technology. For example, if the contractor does not provide a disclosure of the subject invention within a reasonable time after it is made, the contractor will have to assign title to the Government. Such failure to report may also be used as a defense by the Government or by a spare parts supplier if at some later date, the contractor attempts to enforce the patent rights. Contrary to the belief that the short form will reduce the number of Government patent attorneys, data rights efforts in the technology transfer program that I envision will not decrease the need for qualified lawyers, but it will increase the effectiveness of our efforts, and it will reduce the cost of acquisition of research and development.

Senator DOLE. I am going to have to cut you off there, because I have Senator Baker on the telephone, so we will place the rest of your statement in the record, and of course, we will be in contact with you.

I appreciate very much your testimony.

[The following material was received for the record:]

Prepared Statement of Frank A. Lukasik

Mr Chairman, members of the Committee, thank you for your invitation to testify before you today in support of S. 2171, a bill to amend Title 35 of the United States Code for the purpose of creating a uniform policy and procedure concerning patent rights in inventions developed with Federal assistance.

I have carefully considered the provisions of S. 2171 and I urge its success. Based on my experience with the acquisition of major systems and my efforts to administer an effective intellectual property program, I would like to offer constructive comments designed to make this bill even better and more effective in support of Congressional and Executive Branch cost reduction initiatives.

Although not directly related to the provisions of S. 2171, I would also like to express my appreciation of Secretary Orr's deep interest in data rights issues which has focused on the intellectual property area, an area that has been neglected for many years. A recent study by the Air Force Management Analysis Group (AFMAG) put the issue of data rights into context with the total spares acquisition process and illuminated the problem areas. They placed particular emphasis on data management, provisioning, the requirements process and contracting procedures for spare parts and data at all stages of the acquisition process. As a member of the AFMAG team, I had the opportunity to examine the relationship between establishing Government rights in patents and establishing Government rights in technical data. I have attached an illustration showing what I believe to be the relationship between the new technology being developed at Government expense and the rights in intellectual property arising from the research work (Figure 1).

It was primarily due to the increased emphasis on data rights in the AFMAG recommendations that led to my involvement in the debate over the patent policy contained in the Federal Acquisition Regulations (FAR). During the AFMAG study, my office agreed to commit our limited staff to greater involvement in the procurement of spare parts through direct participation with the Competition Advocates and our technical data managers.

My staff consists of myself and two patent attorneys at our headquarters at Andrews Air Force Base, one patent attorney at Space Division, Los Angeles, CA, one in our Contract Management Division, Albuquerque, NM, and one at our Electronic Systems Divison at Hanscom AFB MA. The Air Force Systems Command is currently administering over 11,000 active contracts worth over $130 billion dollars. The Staff Judge Advocates at each of the other Division and Centers act as Patents Officers for the contracts in their areas.

One procedure for administration of subject invention provisions of Air Force R&D contracts may be found in AFSC Pamphlet 110-2. The pamphlet includes flow charts and instructions for processing inventions disclosures, requests for greater rights and sample form letters for patent clearance. This process generally follows the procedures used by the Office of Naval Research for contractor invention surveillance. The Defense Acquisition Regulation (DAR) assigns primary responsibility for patent rights to the Administrative Contracting Officer. It is this procedure with its resulting paperwork which may be reduced if the short form, or OMB Circular A124 clause, were used. We can then concentrate on establishing Government rights in new technology through our review of technical data to determine whether the item, component or process was developed at Government or private expense.

Systems Command has been using the procedure described in the pamphlet since about 1968. The Navy originally developed the procedure and has been following it since about 1964. A review of the Annual reports on Government Patent Policy published by the Federal Council for Science and Technology shows that in spite of the efforts by DoD to monitor contractor inventions, the number of reported inventions has been decreasing rapidly. I will agree that much of the administrative effort that has been expended in the past for invention follow up has been necessary because our only means of establishing Government rights has been by contract. I respectfully submit that with the passage of PL 96-517, and enactment of S. 2171, the Government's rights will be established by law and the contract need only be concerned with the reporting requirements contained in the laws. For example, if the contractor does not provide a disclosure of a subject invention within a reasonable time after it is made, the contractor will assign title to the Government. This requirement to assign title for not reporting within a certain period set forth in the contract should provide ample incentive for a contractor to report in a timely manner. Such failure to report may be used as a defense by the Government if at some later date the contractor attempts to enforce its patent rights. The defense may also be used by a member of the public if the contractor tries to assert its rights under the patent.

It has been argued that use of the short form clause will put many Government Patent Lawyers out of work. As a Government Patent Lawyer, this would not be in my best interest. I strongly believe that the lack of sufficient, qualified, personnel available to predetermine rights in data and to challenge improper data rights legends is greatly responsible for many of the "horror" stories you read about in the papers. Contrary to the belief that it will reduce the number of

attorneys, the data rights efforts and the technology transfer program that I envision will not decrease the need for qualified lawyers but will increase the effectiveness of our efforts and will reduce the costs of acquisition of research and development.

The second method which we use to establish Government rights in inventions is through the Invention Disclosure Review Board (IDRB's) reviews which are conducted twice each year at each of the contractor plants which the Air Force has cognizance over. Four of our patent attorneys participate in the work of the Boards and their primary responsibility is to review the contractor's procedures for reporting inventions. Their secondary responsibility is to review procedures for applying restrictive legends on technical data. In implementing the AFMAG recommendations, we intend to modify the procedures to include review of engineering data to assure that proprietary legends are not being applied improperly. I believe that the IDRB review of engineering data will not only establish the Government's rights to use the data for competitive reprocurement, but will also result in establishing Government rights in inventions and discoveries and resulting patents describing the inventions.

The primary responsibility of my position is to acquire the best weapons systems at the lowest cost. A secondary responsibility is to assure that the technology which the Air Force develops is used in Air Force systems (Technology Transfer) and to protect the Air Force technology from unauthorized use (Export Control). The House of Representatives is currently acting on two Bills, H.R. 4842 and H.R. 5064 which would place substantial added responsibilities on DoD's contracting officers and contractors to increase competition for replacement spares with particular emphasis on improving DoD's access to contractors'

technical data. This bill, S. 2171, will complement the two House Bills and will provide additional legislative guidance in the Intellectual Property area. Public Law 96-517 currently provides incentives for small business to contract with the Government and has already been implemented in the DAR.

The Stevenson-Wydler Technology Innovation Act of 1980, Public Law 96-480, stimulated improved utilization of Federally funded technology developments by state and local governments and the private sector. The Act overcame a major obstacle to DoD's efforts to transfer technology to the private sector by effectively removing the Mansfield Amendment (Section 203) as an impediment to technology transfer. In August 1981, the Air Force established an Office of Research and Technology Applications (ORTA) at each of its ten laboratories. The DoD's technology transfer program is described in its report, "The Technology Transfer Control Program, A Report to the 98th Congress," Feb. 1983. During fiscal year (FY) 1984, DoD will use 157 full-time persons and will spend $11.590 million on technology transfer activities. Employees at the Under-Secretary's of Defense Office are divided between the Office of Policy (46 positions) and Office of Research and Development (22 positions). The balance of personnel are allocated to Navy (37), Army (47), and Air Force (5). In the Air Force, all four of the ORTA technology transfer functions given in the Act are vested in the established ORTA. Since technology transfer is part of the overall mission of the laboratory, it is difficult to estimate either the amount of time or money dedicated to this activity. In March 1982, Air Force Systems Command Regulation 80-25 "Technology Management Reviews," was revised to require that the Program Manager at each laboratory perform the technology application assessment mandated in PL 96-480.

I have briefly described our current effort to implement PL 96-

480 because it is directly related to my previous statement that I do not intend to suggest taking jobs away from Government Patent Lawers. I have supported the efforts of the Office of Productivity, Technology and Innovation, in the Department of Commerce, in its efforts to establish a "full service" ORTA as described in the draft paper entitled "Managing and Transferring Intellectual Property Forms of Government Technology," dated 23 December 1983. In this draft paper, and its report to the President and Congress on the Stevenson-Wydler Act, the Department of Commerce stated a need for trained professionals to engage in technology transfer. The Department recommended consideration of a new category of professional employees, entitled, "Federal Technology Managers" to implement the procedures recommended in its report. Some of the suggested responsibilities of a "full service" ORTA would be: to identify, evaluate and arrange for protection of new technologies; to grant patent licenses or assign future invention ownership rights; to promote commercial use of the new technologies produced by the laboratory which may lead to new business ventures; etc. The patent attorneys would qualify as Federal Technology Managers since the Department suggests that previous legal, engineering, technology transfer and product development experience be taken into full account when filling positions and making promotions in this new category of professional employees.

Another very important function that the ORTA may perform is that of export control. Policy, regulation, and law are frequently changing for technology transfers. Since it appears that technology is changing faster than its control mechanisms, it has been difficut to obtain a consensus between the Government and its industrial suppliers. Congress, in the fiscal year 1984 Defense Authorization Act, added a new statute at 10 U.S.C. 140c that permits the Secretary of Defense to

withhold from public disclosure any technical data with military or space application. While access to classified contracts is governed by the Industrial Security Manual, until Secretary Weinberger's recent policy promulgation, no such controls existed for "distribution - limited data" resulting from unclassified contracts. Lawyers, especially patent lawyers, have frequent opportunities to recognize problems that may not be immediately apparent to others. These opportunities arise through review of message traffic, correspondence, or legal queries not directly related to the security assistance field. A "full service" ORTA manned by a competent, experienced patent attorney could also assist the export control program in preventing unauthorized or inadvertent export.

It is my firm belief that an amendment to the instant Bill, S. 2171 to establish a "Full Service ORTA" under the Stevenson-Wydler Act, P.L. 96-480, would generate considerable enthusiasm and support. There may be some opposition to such a program based on resistance to change, administrative obstacles, and dislike of unfamiliar, difficult and frustrating problems. To maintain its reputation, vitality and momentum, the Government, as a technology oriented organization, needs to revamp certain activities and grow new activities and programs. A department that cannot explain itself pursuasively and gather adequate support is properly judged to be self serving and it rapidly loses its association with the structure of public priorities. The technology transfer program proposed by the Department of Commerce, in addition to improving cross-fertilization of technology within the Government, will also enhance the Government image by publicizing the benefits of Government sponsored technology to the public. The private and Government environment is now generally favorable to such initiatives if they are convincingly explained and vigorously advocated.

In conclusion Mr Chairman and members of the Committee, S. 2171, will provide the uniformity in Government patent policy which has been sorely needed by the research and development community. The Bill will codify a patent policy which the Department of Defense has used fairly successfully for many years. While providing clear guidelines for Department action, the Bill also provides sufficient discretion in determining practices and procedures for day-to-day decisions. Mr Chairman, I would be pleased to answer any questions you may have.

NEW TECHNOLOGY

COMPRISES	INVENTIONS	INNOVATIONS	IMPROVEMENTS	DISCOVERIES
MAY BE	STATUTORY PATENTABLE SUBJECT MATTER	1) MACHINE 2) PROCESS 3) COMPOSITION OF MATTER 4) ARTICLE OF MANUFACTURE		
PROTECTED BY	PATENT (STATUTORY)	TRADE SECRET (COMMON LAW)	COPYRIGHT (STATUTORY)	
	INVENTIONS DISCOVERIES	INVENTIONS DISCOVERIES INNOVATIONS IMPROVEMENTS	MANUALS COMPUTER PROGRAMS SPECIFICATIONS MOTION PICTURES	
DEVELOPED AT GOVERNMENT EXPENSE	ROYALTY FREE LICENSE	UNLIMITED RIGHTS	ROYALTY FREE LICENSE	
	CONCEPTION AND/OR FIRST ACTUAL REDUCTION TO PRACTICE	ITEM, COMPONENT OR PROCESS DEVELOPED	GENERATED UNDER R & D CONTRACT	
DEVELOPED AT PRIVATE EXPENSE (R&D CORP. FUNDS)	NO LICENSE	LIMITED/RESTRICTED RIGHTS	NO LICENSE	
	CONCEPTION AND FIRST ACTUAL REDUCTION TO PRACTICE	ITEM, COMPONENT OR PROCESS DEVELOPED	DEVELOPED AT PRIVATE EXPENSE	

FIGURE 1

14-04C23

AN AMENDMENT TO S. 2171 TO ESTABLISH

"THE FEDERAL LABORATORY COOPERATIVE R&D PROGRAM"

1. Directors of Federal laboratories with annual appropriated funds of over $ and the directors of such other Federal laboratories as may be designated by the heads of their agencies are authorized to:

(a) Commit their laboratory to cooperative research and development arrangements (including invention development by a patent licensee) with other Federal laboratories, units of State or local government, industry, universities, and other nonprofit or profit organizations including t general partner of an R&D limited partnership to the extent s arrangement is consistent with the mission of the laboratory,

(b) Grant patent licenses or assign future or existing ownership rights in accordance with the standards and regulations developed under 3(b) and (c) below, in any laboratory invention in which the government has a right or future right of ownership as a condition of any arrangement made under the authority of Sec. 1(a) above,

(c) Accept funds including royalties and research cost sharing, services, and donations or use of property in accordance with any arrangement made under the authority of Sec. 1(a) above,

(d) Utilize royalties or other types of compensation returned to the laboratory as a result of any arrangement made under the authority of Sec. 1(a) above to fund or assist in additional mission related R&D of the laboratory, support employee development and education, or further scientific exchange, and,

(e) Administer an incentive award program for laboratory inventors, including the sharing of royalties returned to the laboratory as a result of any arrangement made under the authority of Sec. 1(a) above.

2. The authorities of Sec. 1(a) through (e) may only be delegated to laboratory staff serving under the director except as follows:

3. The Office of Industrial Technology established under Sec. 5 of P. L. 96-480 shall:

(a) Develop techniques for use by the Federal laboratories to aid in early determination of the commercial potential of new

technologies generated in performance of Federal laboratory research.

(b) Develop and administer training courses to increase the invention awareness of laboratory research performers and to communicate the essentials of commercialization options which are available to the Federal laboratories, including R&D limited partnerships.

(c) Develop standard invention disposition provisions for use in arrangements made under the authority of Sec 1(a) above that include protection of the Government's interests as necessary.

(d) Issue, monitor and amend on the basis of experience, regulations (including the standard provisions of Sec. 3(c) above) for the management of the Federal laboratory cooperative R&D program. Issuance and amendment of the regulations shall occur after consultation with the Federal agencies and public comment.

(e) Furnish advice and assistance to laboratory directors in the exercise of authorities of Sec. 1(a) through (e) above.

(f) Report to the Congress on an annual basis on the activities and accomplishments of the cooperative research project program, including technologies being developed through cooperative R&D arrangements made under the authority of Sec. 1(a) above, and recommendations for legislative changes if deemed desirable.

4. The Federal Agencies shall:

(a) Assist Commerce and the Federal laboratories in accomplishing the goals of the cooperative research program.

(b) Amend laboratory mission statements to require that new technologies be mangaed so that private sector collaborative assistance in completing their development can be sought at the earliest possible time. Such management should include adoption of techniques developed under Sec. 3(a) above.

(c) Refrain from reducing the budget of a laboratory to compensate for funds received under the authority of Sec. 1 above, unless the agency determines that a long-term reduction or significant redirection of the laboratory's program is necessary.

(d) Forward to the Treasury any funds remaining from patent royalties after completion of employee incentive payments in the event the agency determines the laboratory should not keep them.

5. Funds authorized $ 0

Responses of Frank A. Lukasik
to Written Questions of Senator Dole

IN YOUR OPINION CAN THE LABS WORK WITH INDUSTRY EFFECTIVELY UNDER THE PRESENT RESTRICTIVE PATENT POLICIES -- WHY NOT?

No! The national interest requires closer collaboration between the Federal Laboratories, universities and industry to ensure continued advances in science and its transition into useful products. When the Government takes title to a patent it then owns 100% of nothing which equals zero. If an inventor is permitted to retain title, exploit the invention, and successfully market the product, the Government then receives up to 50% of something, in the form of income tax receipts from a corporation or personnel employed to manufacture the items. Without the inventor's involvement, the Government's attempts to license its inventions are met by the NIH (Not Invented Here) syndrome, which is likely to be the major reason that so few Government owned patents become licensed.

THE PRESENT LAW REQUIRES UNIVERSITIES TO SHARE ROYALTIES WITH EMPLOYED INVENTORS. DO YOU FEEL THAT SUCH A POLICY IS APPROPRIATE FOR THE NATIONAL LABS? SHOULD LANGUAGE BE ADDED TO THE ACT ON THIS? IS THERE ANY OTHER INCENTIVE FOR A LABORATORY INVENTOR TO WORK FOR THE COMMERCIALIZATION OF THEIR INVENTION?

Yes, I do feel that "royalty sharing" is appropriate for the national laboratories and that the Act should be amended substantially as shown in Attachment #1. One of the major impediments to the transfer of technology from DOD run laboratories is the expenditure of mission related R&D funds for non-mission related efforts. Paragraph 1(d) of the attached amendment would encourage laboratories to increase their cooperative efforts. The royalty sharing feature of Par. 1(e) would incentivize inventors to disclose more inventions and thus increase technology transfer.

I have attached a copy of Section 4 of the Advisory Committee on Industrial Innovation, which contains an excellent discussion of the many issues involved. I cannot visualize any better incentive for commercialization than a share of the profits.

MR. LUKASIK, IN YOUR LETTER TO THIS SUBCOMMITTEE IN JANUARY, YOU EXPRESSED THE NEED FOR YOUR AGENCY TO HAVE FLEXIBILITY TO USE THE SHORT FORM FAR-CLAUSE. FOR THE RECORD, WOULD YOU EXPLAIN YOUR POINT OF VIEW ON THIS MATTER TO THE SUBCOMMITTEE?

The Air Force Systems Command, which is currently administering over 11,000 active contracts worth over $130 billion dollars, has six registered patent attorneys. As a potential solution to the spare parts data rights problem, we are committed to a more active role in identifying and challenging improperly marked technical data. Establishing Government rights in items, components and processes, with subsequent rights to compete spare parts procurement, in my view, is far more effective than the current method (Long Form) being used to establish Government rights to the patents covering these same items, components or processes depicted in the technical data in the possession of the Government. It is the long form procedure, which is mostly paper-shuffling, which may be reduced if the short form were used.

I believe that when S.2171 is implemented, reporting requirements should be limited to those expressly stated in the Bill. Members of the public, armed with appropriate legislation, can then police the public interest when and if the need arises. Government employees may then play a more active role in transferring the Government sponsored technology to the private sector.

IS OWNERSHIP OF A CLASSIFIED INVENTION A PROBLEM DURING THE PERIOD IT IS BEING MAINTAINED UNDER A SECRECY ORDER IN THE PATENT OFFICE?

Yes! Under 35 USC 183, inventors who have filed patent applications which are placed under a Secrecy Order only obtain compensation for Government use of the invention. They are not compensated for their lost potential for commercial business. Furthermore, it is difficult, if not impossible, for the inventor to determine the extent of use by the Government, of an invention covered by a Secrecy Order. Although classification and control in some cases is necessary, those who apply it balance the potential harm to the individual and to the country by inhibiting the transfer of technology. Providing a mechanism, such as a "Full Service ORTA", to transfer classified technology, would make the balancing process easier.

[EXCERPTS]

ADVISORY COMMITTEE ON INDUSTRIAL INNOVATION

FINAL REPORT

Section 4

OTHER MATTERS CONSIDERED

A. COMPENSATION OF EMPLOYED INVENTORS

The Subcommittee as a whole agreed that corporations should be encouraged to continue to motivate their employees to participate in all phases of the innovative process. Awards, promotions scientific recognition, release of unused inventions to the inventors, and other systems are presently being used successfully throughout industry in the United States. The Subcommittee applauds the use of such systems and encourages their expansion to include such things as public recognition of innovators.

Some members of the subcommittee proposed that legislation requiring corporations to give employees a greater stake in their inventions would be a stimulus to innovation. The Subcommittee conceded that such legislation might increase the number of invention disclosures but not have a positive effect on the overall innovative process. In fact, the Subcommittee felt very strongly that an attempt to apply a uniform system on all corporations (such as is done in some European countries) would result in a significant decline in overall innovation and could have the additional negative impact of flooding the Patent Office with patent applications directed to inventions of little or no commercial value. The results in countries that have initiated such systems bear out these results. The attached paper submitted by Mr. Richard C. Witte (appendix G) entitled "Implication of a Federal Law Providing Employed Inventor Awards" sets forth in greater detail the implications of such proposed legislation.

Mr. Richard L. Garwin's paper presented to the Subcommittee on November 16, 1978, and Mr. Eric P. Schellin's paper submitted to the Subcommittee on December 8, 1978, set forth proposals for dealing with the inventions of employed inventors. Both papers are included in appendix G.

APPENDIX G

Implications of a Federal Law Providing Employed Inventor Awards

The implications of the inventor compensation proposals for modern industrial research as it is practiced in the United States are quite clear. The results will be adverse to the national interests. A source of strength—the American spirit of teamwork applied to solving complex technological problems—will be needlessly wasted.

Invention, as used in the patent laws, is a legal term. As outlined in appendix A, invention is only one of the

key steps in industrial research. Outstanding invention is preceded by the appropriate research, both pure and applied; particularly important is the need for pre-invention research to understand the needs of society. Invention must be followed by competent applications of research and engineering, safety and environmental testing, marketing, and raw material supply if a commercial benefit is going to accrue. This involves many scientists and engineers and nontechnical persons carrying out their part of the total process in full and open communication with the other participants. Only a very small percentage of the technical participants will be involved in legal invention and, hence, eligible for the award scheme. Typically, of all the "inventions" for which patents are granted, only a few will have great commercial significance. Further, such significance will only appear years after the invention and following great investment and much creative work by others of the industrial research and commercialization team.

Singling out "inventions" from all the other activities in industrial research for possibly large awards will:

1. Reduce the effectiveness and efficiency of industrial research by reducing communication between participants. Pure and applied research scientists will become more secretive in an attempt to make sure that they make the invention themselves. This will importantly reduce the probability of outstanding inventions occurring. Certainly, the increased secrecy will retard the overall progress of the industrial research effort to reach its goal.

2. Make it more difficult to ensure that objectivity is maintained in the evaluation of inventions. Inventors will have a monetary interest in pressing their own inventions. This interest may prevail to the prejudice of scientific objectivity in the evaluation of the economic, safety, and environmental implications of an invention.

3. Lead to distortions in technical work programs to the detriment of industrial research, reducing its overall effectiveness. If invention is seen as where the major rewards are, technically trained people will be attracted to choices offering opportunity to "invent." They will be inclined to forsake other areas of technical work such as basic research, safety testing, analytical, and engineering which offer lesser prospects for awards. There is no reason to believe that invention is the limiting factor in industrial research.

4. Undermine the sponsorship of industrial research and the commercial investment necessary to bring inventions to the marketplace. The reduced efficiency of the research and development organizations will increase their costs which, in turn, will mean that fewer research and development projects will be undertaken. The more marginal will be avoided for simple economic reasons. When "inventions" do occur, new uncertainty will be added to the many surrounding the commercial decision whether to invest in the invention to bring it to the marketplace. This new uncertainty is the chance of the enterprise being required to make large payments to the inventor. With this added risk, the number of new products reaching the market will be reduced. Both of these effects will tend to reduce employment of the nation's technological and other productive resources and retard its progress.

In net, the only people to benefit from this proposal are the few individuals who receive awards. Everybody else, from society in general through the slowing down of the industrial research process to the other scientists and engineers through the reduced effectiveness of their efforts, will suffer. The proposal would introduce a completely untried scheme into the heart of the industrial research program with no showing that real benefits will result. While employee inventors should be given every encouragement and recognition, it is doubtful whether in the context of industrial relations this is best done by the imposition of statutory obligations on the employer.

EMPLOYEE-EMPLOYER RELATIONSHIP

Those of us who are not inventors have oftentimes made the nonsensical remark such as "that a man with an inventive turn of mind will invent, no matter what." [1]

To counter the above Jack Rabinow once stated:

> "When I worked for the Bureau of Standards and calibrated water current meters, I invented nothing. . . . Then I was thrown into war work . . . and my inventing shot up tremendously because I was given an environment where they wanted inventions.
>
> . . . I quit the Bureau of Standards and opened my own company and became a consultant. Suddenly the invention rate went up to some six times higher than it was at the Bureau of Standards. . . . I invented like mad. Then I sold some stock in my company, and the invention rate went to near zero because I was busy with Wall Street.
>
> It's not true that you invent 'anyway,' you invent when you are busy inventing and you don't invent when you are selling stock."[2]

The foregoing is submitted to clearly focus that it takes motivation to invent. It is within the purview of this abbreviated report to look at what avenues are open to provide that motivation.

Patent assignment data indicates that about 80 percent of all patents are in the names of inventors who are employed by others. It is important to note that nearly all of these individuals are required to preassign their patent rights to their employers as a condition of employment, and they derive little or no direct benefit from their patents. Most employers state that their engineers are "hired to invent." Though it is true that some engineers and scientists are specifically hired to invent and are paid high salaries, given elaborate laboratory facilities in which to function, and are recognized with bonuses and awards for their genius, most inventions do not emanate from this group. Engineers are usually hired to carry out specific tasks which include research, development, marketing, production, sales, etc. and most inventions are ancillary to the job. In the

---

Appendix G was submitted to the subcommittee by Mr. Richard C. Witte, Chief Patent Counsel, the Proctor-Gamble Company.

[1] The Public Need and the Role of the Inventor, Proceedings of a Conference held in Monterey, Calif. June 11-14, 1973, National Bureau of Standards Special Publication 388, p. 105.

[2] Ibid, supra n. 1, p. 116.

employment situation, two engineers, given the same assignment with the same program goals and objectives can behave in different ways. One engineer will solve the problem adequately with known technology; and the other will find a better solution for the problem through his creative talent—and an invention is born. In both cases, the individuals were not "hired to invent" and were receiving the same remuneration for their activities.[3]

In a study done for the 87th Congress, Subcommittee on Patents, Trademarks and Copyrights, of the Committee on the Judiciary, the merits of common corporate practice were questioned in conjunction with the position experienced by employed inventors in Europe.

> "The corporations themselves, in pressing for the policy of the Government, leaving with the research contractor the patents that stem from government-financed research, vigorously contend that money compensation alone is not sufficient to bring forth the best efforts of the researchers and that they (the corporation) should receive patent rewards as well. Assuming without conceding that this be true in the case of government research contracts, corporations have not made it clear why it should be any less true in the case of their own employee contracts."

The incentives granted to employed inventors vary from $1 granted at the time of patent application to cash awards for accepted disclosures, and subsequent patents issued. Some employers grant the employed inventor a "piece of the action" by giving him a percentage of royalties derived from licensing others to practice the patent.

Some industrialists have argued that it is unfair to grant special recognition to inventors when there are others in their firms who also apply creative talent for the good of the enterprise and who do not receive special awards and recognition. Concern has been expressed that if employed inventors are granted special recognition, an air of uncooperativeness will develop among the "technical team." In a letter to the editor of Chemical Engineering News,[4] Dr. George H. Hitchings, Vice President, Burroughs Welcome and Company, said:

> . . . industry has tried all sorts of formulas for patent pools, in which royalties were set aside for the benefit of the inventors—all of those (incentives) proposed now and many more besides. The downfall with such schemes has been the internal dissensions they create. It is often difficult enough to adjudicate the authorship of scientific papers where a spectrum of greater and lesser contributions by a number of individuals is involved.

The possibility of creating possessiveness in intellectual property when incentives are given to individuals for their disclosures, may be a consideration. However, the free enterprise system has thrived on competition as a technique for increasing creativity and productivity. Members of sales staffs are granted incentives through commissions and bonuses. Members of the managerial staff receive bonuses which are related to their "productivity." In production facilities, some individuals work for "piece rates" or are granted incentive bonuses associated with productivity. Both individual and group incentives have proven to be successful in stimulating extra performance and are identified in text books on modern industrial psychology. Additional incentives to inventors will produce increased disclosure.

Employers say that employed inventors have adequate incentive through potential promotion and salary adjustment. However, advancement and recognition are not always automatic for the creative individual. Advancement (promotion) usually infers an increase in supervisory responsibilities. However, the inventor may not necessarily possess the managerial skills required to assume a supervisory position. Salary increases are often coupled to standing industrial relations policies that neglect to relate the true value of inventiveness to the goals and objectives of the enterprise. Finally, patent incentive awards rarely are based upon the worth of the invention.

In a study conducted by Albert S. Davis, Jr.,[5] the following was reported:

> When the Patents, Trademark and Copyright Foundation questioned a carefully selected sample of productive corporate-employed inventors in 1962 to learn whether they would be stimulated to produce more inventions, by far the largest proportion of those replying said they could, and that cash payments, bonuses, and royalties on a percentage basis were the way to do it.

Admiral Rickover addressed the Subcommittee on Patents, Trademarks and Copyrights in the 87th Congress and tied employed inventors' incentives to the intent of the Constitution:

> ". . . one of the two major problems facing the patent system is how to increase incentives for employed inventors who get no benefit whatever out of the patent system as it has evolved. We might well consider whether we ought not to go back to the original intent of the Constitution and devise some reward for inventors whether they are government or industry employees."

Would increased incentives cause an increase in disclosures? Yes, and this can be seen from a brief survey of the experience at the University of California. Prior to July 1963, the University did not require preassignment of patents, but there was a small percentage of the royalties given for inventions disclosed. A change was instituted which resulted in a five-fold increase in disclosure rate. As reported in December 1967 by the Patent Department of the University:

> Under the new policy, the assignment of inventions is mandatory on request and the inventor receives one-half of the net royalties.
>
> This change has had a dramatic impact on the number of inventions voluntarily disclosed by University staff and faculty.
>
> These figures, we believe, demonstrate the value of a policy with a built-in incentive to the inventor.

[3] Robert J. Kuntz, The Inventor's Incentive to Disclose in the Corporate Enterprise System, APLA Quarterly Journal, May 1973, p. 84.

[4] Chemical and Engineering News, June 15, 1970, p. 6.

[5] Albert S. Davis, "A Piece of the Action," International Science and Technology, p. 50 (December 1963).

1961	48
1962	35
1963 (first half)	28 old policy
1963 (second half)	93 new policy
1964	188
1965	187
1966	220
1967	187 as of Dec. 12, 1967"

This type of data is difficult to find, since the trend in the country is toward more restrictive policies rather than more liberal.

An inventor summed up the essence of the incentive system. In a statement reported in The Journal of the Patent, Trademark and Copyright Research Institute of George Washington University, Volume 7, Conference Number at p. 179, Richard R. Walton stated:

> I wish to state categorically that there is no great and successful industrial innovation that has not been accompanied by a very strong profit motive. The inventor is pushed from behind by the specter of want and failure, but he is pulled forward by the opportunity of large gains if successful. Actually, in speaking of motive, probably the nicest of them all is the profit motive.

The essence of this statement is the profit motive. In the current industrial enterprise system, where are the "large gains" for the employed inventor?

A drastic action to thwart the preassignment agreement would be to pass legislation that would make such an agreement an unfair labor practice act. In fact such a bill was introduced in 1963 by Congressman George Brown (D–Calif.) (H.R. 4932) which came to naught.

A milder and perhaps more salutary recommendation may be found in the type of legislation that Congressman John E. Moss (D–Calif.) has introduced into the House of Representatives in every Congress since 1970. The Moss bill was modeled after the West German Law for Employee Invention Rights which became law in 1957. An inquiry was made by the California Society of Professional Engineers to determine the reaction of an association of German engineers, Verein Deutscher Ingenieure, to the law. They stated:

> "According to the documented experience, the Law for Employee Invention Rights, of July 25, 1957, was well accepted by employees. Also, we are of the opinion that this law of the Federal Republic of Germany is one of the most modern regulations to be found in the world, as it equalizes in a responsible manner the divergent interests between the labor rights and the corporation rights."

The bill is a comprehensive approach to the problem which recognizes both the rights of the inventor and the innovator. It differentiates between an invention made in the course of employment and inventions that are the result of individual efforts external to the job environment and not related to the employer's business. To insure that disclosures reach the light of day (the constitutional purpose), it establishes specific periods of time for actions by the inventor and innovator. The thrust of this bill is to provide protection of the inventor's interest so as to increase the incentive for the inventor to disclose. The increased disclosure will certainly benefit the public with more patented inventions, and the employers can't help but benefit in the sale of these inventions, the sale of the products, and the royalties derived from licensing others to practice these inventions.

It can be concluded that the creative, technically inclined person is poorly if at all protected in his relationship with employers. His integrity is being compromised by the concentration of capital and its ultimate control of his only salable product, his ideas. If remedies are not developed for the individual we shall shortly observe the demise of small technological firms, a resulting loss of many ideas, the stagnation of economic competition and fruitful and varied development, and the further concentration of the means of production into the hands of a few would, perhaps, not maliciously but with similar results, dictate the economic status, rewards, and civil liberties of the vast majority who have become simply wage earners marking time for an impersonal employer.

Undoubtedly, many readers of the foregoing will take great exception to what has been proposed. I would remind those individuals that one of the reasons for this committee's very existence is due to our stumbling in achieving innovation in the face of Japanese and German competition *and* I would further remind those individuals that these two countries possess statutes of the type that I would now ask you to entertain.

Appendix G was submitted to the subcommittee by Eric P. Schellin, Esq., Vice Chairman, Board of Trustees, National Small Business Association, Washington, D.C. 20006.

Testimony U.S. Department of Commerce
Committee on Innovation
November 16, 1978
by
Richard L. Garwin
IBM Thomas J. Watson Research Center
P.O. Box 218
Yorktown Heights, N.Y. 10598
(914) 945-2555

Thank you for the opportunity of appearing before you and presenting my views, especially on the role of the inventor in this important problem of improving the rate and impact of innovation on the U.S. economy. I was invited to testify by one of your members, and I do so as an individual without attempting to represent the view of my principal employer—IBM—or any other group.

My brief biography is attached as the last page of this testimony, but I should summarize here that I have personally been granted 27 U.S. patents, most of them assigned to my principal employer, but several issued to me in other capacities. My most recent patent No. 4,097,115 was issued June 27, 1978, to me and James Levine, "Optical Scanning Device for Producing a Multiple Line Scan Using a Linear Array of Sources and a Textured Scanned Surface." In addition, I have invented many other useful devices or processes, some of which have been published in scientific and technical papers, some in the patent literature, and some abandoned for various reasons without proceeding through the patent process. These inventions range from those

concerned narrowly with nuclear weapons through devices for automobile carburetors and braking systems, to prospecting for oil and minerals, to advanced communications and computer concepts, to space propulsion systems of various kinds, improvements in sound-on-film movies, a washer for mussels (shellfish), and so on.

In addition to this background as an inventor, I have been involved since 1950 in a consulting capacity to the U.S. Government or its contractors, and since 1952 as an employee in the Research Division of the IBM Corporation, where I have served as Director of Applied Research, and for a time as a member of the Corporate Technical Committee. I am also a member of the Research Advisory Board of the Committee for Economic Development, and have had a considerable concern for the health of the U.S. economy and for the standard of living of the peoples of the world, especially of the United States. Thus I have seen the process of invention and its impact from many viewpoints.

By now you have no doubt heard many times the general economist's view that 50 percent of the advance in the standard of living in the United States in recent decades has been due to the influence of science and technology, the rest arising from provision of capital, education, and the like. My concern is with the more efficient management of this scientific and technological sparkplug, improving the quality of our choice among technical options, and increasing the amount of quality invention and technology from which to choose.

My testimony of April 26, 1978, to the Senate Commerce Committee (attached) is concerned primarily with the Research and Development process, of which invention is only a small part, but I do emphasize in figures 1 and 2 that *invention* and not research is the origin of some advances or provides the key to the solution of some problems—a point too often ignored by those who write about or manage enterprises.

Now for the role of the inventor. One often hears that the time of the individual (garage or attic) inventor is past—that invention and innovation come now largely from team efforts of large corporations. I could hardly deny the importance and effectiveness of well-run technologically advanced industry in inventing, developing, and fielding important inventions and systems. I do believe, however, that even such organizations tend to underestimate the importance of a special class of inventors, whether employed by such organizations or quite independent of them. These are individuals of generally broad experience who have not lost a certain degree of naive ingenuity, and who have at the same time an analytical and self-critical faculty. About such people I can only say what is reputed to have been advocated as to how to treat a specimen of a cross between a canary and a crocodile: "I don't know, but when it chirps, you had better pay attention." Three such people whom I know well are Luis W. Alvarez, James G. Baker, David E. Sunstein. Their inventions cannot be confined to a narrow field; society will therefore benefit most if the inventive product of these rare individuals is properly protected by the patent system and commercialized. What stands in the way?

FOR THE INDEPENDENT INVENTOR, probably the greatest bar is a certain lack of competition in segments of U.S. (and especially world) industry. This is particularly frustrating in the automotive field.

There are, of course, "people problems" in commercializing inventions by selling the patents or rights under the patents. In many organizations contact with the outside inventor is through technical people within the company who have a "not invented here" attitude. This is a common inhibition on the application of inventions developed within the company as well, and is a severe problem for management. One might think that the normal business goal of maximizing profit would lead to incentives such as an award or bonus for an individual who identifies an invention or innovation in the outside world or in another division of a large corporation and manages to bring it into his or her own division, but such incentives seem rare. Such positions seem rare, too.

Another inhibition to society's receiving maximum benefit from the individual inventor is a lack of contact with important problems. My own experience shows that any of the outstanding individuals whom I have mentioned simply cannot help inventing reasonable and numerous solutions when presented with a problem. I know equally intelligent and experienced people who have never invented anything although they contribute in other ways.

THE INVENTOR EMPLOYED IN INDUSTRY has different problems, and I suppose that is more directly the concern of the present Committee. Often the inventor is rather narrowly constrained to work within the field of interest of the company and in fact on specific products. In many cases, more freedom for the inventor will result not only in more inventions altogether but even in more inventions in the field sought. That applies to the experienced inventor.

I believe that far more individuals are capable of invention but that they should be rewarded for good inventions, not only for those which make it successfully to the marketplace. Too often, in my experience, rewards go to the team within a corporation which put a product into the marketplace, without recognition of the important role played by other internal competitors who make nearly as good and inventive a product candidate, which then sets a standard which is surpassed by the product finally fielded. The commercial success of the product and thus the scale or fact of rewards are often entirely out of the hands of the inventor. He need not be rewarded for *every* good invention, but rewards should be sufficiently likely to serve as a stimulus not only to inventors in the field but to others to begin to exercise that combination of talent and experience. "Recognition" is nice, but material incentives are more widely used for corporate officers; they might work for inventors too. Of course, the inventor must realize that the invention itself does not ensure commercial success—that rare talents and efforts in development, management, sales, and the like are also necessary and must be paid for, so that the inventor's share or royalty may properly be only a few percent of cost or price of the item containing the invention.

The U.S. economy is also affected by the degree to which inventions are commercialized even if they are not in the mainline of business of a corporation. My own employment contract with IBM gives IBM title in my inventions which relate to the field of interest of the corporation, but I have made several inventions for which I have been granted formal releases by the corporation. There is also, however, the general question of inventions made within the field of interest of the employer but which are not patented or perhaps not commercialized by that employer, or which may be made jointly with independent inventors.

In thinking about this particular matter a decade ago, my thoughts ran about as follows:

Proposal for the Disposition of Inventions not Used by Company

Recent history is replete with inventions which have been rejected by many and yet when finally taken seriously have resulted in a great industry and a very valuable patent. One prize example is the Carlson patent for the Xerox process, which it is said was offered to 20 companies before a single taker was found. It is argued that inventions conceived by the employees of a large corporation, which normally are developed if they fit the taste, market, skills, and appetite of the particular corporation, have only a small probability of being brought to fruition, thereby discouraging invention by the employees, reducing the benefits to society of the research and development supported by a corporation, and eliminating the possible flow of royalties to the inventor or to the corporation which might result from a very successful invention brought to the marketplace by others.

These problems are probably exacerbated in a large corporation, in which small questions like individual marginal inventions receive little attention in competition with the large problems of the moment.

In outline form, this problem might be solved by allowing the employee-inventor to offer his invention (patent-applied-for or not) first to the company product divisions, next to company patent development, and finally, if company has taken no constructive action within a reasonable period to realize the invention, to outside firms or individuals who would receive exclusive licenses from company. In this role as an entrepreneur, the employee would be acting as an individual and not as an agent of company. Any royalty which might be agreed between the employee and the outsider would be paid to the employee, probably with some fraction of the employee's receipts going to company (this fraction might lie between 10 percent and 50 percent, and should be determined by further analysis).

Many points need to be clarified in this concept, before a good analysis can be made. Some of the clarification can be made by assumption, some will be left for iteration. For example, what does it mean to offer an invention to company—is an invention disclosure enough? Is the inventor's division responsible for attempting to evaluate the invention for its own use and to sell it to other divisions? What is a reasonable time? Six months? Twelve months?

After specifying these details, the worth of this proposal rests:

1. on the degree to which invention will be stimulated among the employees,
2. on the impartiality with which the employee offers the invention to company and then to the outside firm, when he receives a cash royalty only from the outside firm,
3. on the statement of reasonable rules governing the sale of inventions to competitors of company, and
4. on the amount of royalty income which it is anticipated these inventions might bring.

Clearly, the interaction of the company employee with the outside firm is a delicate matter, and it might be constrained to be by correspondence, a copy of which would be deposited with company patent development.

There may be precedence for this proposal in the policy which has long been in effect for employees of U.S. Naval Laboratories, although it probably differs in detail.

As a matter of some relevance, one might review a recent proposal (Annual Report on Government Patent Policy, June 1966, Federal Council for Science and Technology) governing the transfer of patent rights to employee inventors.

In this field it is much easier to identify problems than to prescribe workable solutions, but I think that we also serve who from our experience responsibly point to such difficulties. One problem which I am sure has already been brought to the attention of this group is that concerned with mandatory nonexclusive licensing of patents.

In general, where the U.S. Government owns title to a patent, it will license it on a nonexclusive basis to all comers. This means that an individual or organization might invest great resources in the somewhat risky process of full development and marketing of a product based on an invention, only to find its commercial success shared or taken from it by a competitor who can move into the field later, taking a license on that same patent after all the risks have been removed. Of course, if the original entrant can move sufficiently fast, obtaining additional patent protection and the like, then it can keep its advantage, but otherwise because of a quirk in the law or of a policy decision, there may be none willing to take the risk of being the first in the field.

To some extent, cross-licensing agreements among commercial firms may have a similar effect on retarding introduction of innovation in the marketplace. For example, if an alert company MNO sees in the patent portfolio of company QRST an invention which QRST is not exploiting but which could make a profitable business, company MNO may take a license from QRST at, one hopes, reasonable terms. But if MNO makes a commercial success of this product, cross-licensees of QRST (some of whom may already be in the business of MNO) can move into the field without the development and market risk assumed by MNO. Thus, MNO is reluctant to innovate, and society loses.

There are no easy solutions, but I ask that the benefits and costs of different elements of the patent law and custom be evaluated from the point of view of benefit to society. My general experience is that the marketplace does a better job of maximizing benefits and apportioning reward than does a more centrally managed system and so I urge the thorough evaluation of the benefits of greater use of exclusive licensing and a greater recognition of the rights of inventors in their inventions. I feel that there must exist solutions which will provide greater benefits for society, for industry, and for the inventors themselves.

Senator DOLE. Dr. Robert Adams, senior vice president of 3M Co.; Mr. William Carey, president of the American Association for the Advancement of Science; Mr. Louis Mogavero, president of Trantak, Inc., in McLean; and Mr. William Riley, past president, Licensing Executive Society, U.S.A. and Canada.

Excuse me for a moment. I need to talk to Senator Baker. [Pause.]

I want to hear from those who have come some distance to be here, and I think the ones who are close by, we can work with later.

So, Dr. Adams, please go ahead.

STATEMENTS OF DR. ROBERT M. ADAMS, SENIOR VICE PRESIDENT, 3M CO., ST. PAUL, MN; WILLIAM E. RILEY, JR., PAST PRESIDENT, LICENSING EXECUTIVES SOCIETY, U.S.A. AND CANADA, AND DIRECTOR OF MARKETING, BATTELLE CORP., COLUMBUS, OH; WILLIAM D. CAREY, EXECUTIVE OFFICER, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, WASHINGTON, DC; AND LOUIS MOGAVERO, PRESIDENT, TRANTEK, INC., McLEAN, VA

Dr. ADAMS. Senator, thank you very much.

My name is Bob Adams. I am employed by the 3M Co. in St. Paul, MN, and I am pleased to note that I seem to be the only witness this morning employed by industry directly.

I would like to give you a short history of 3M, but I will not. The question is why hasn't 3M taken more Government contracts in the past, R&D contracts. It is very simple, really. Certainly, we get new information from such contracts, and we are very pleased at that. The Government fee is not particularly attractive for building a business. We might get a procurement contract on it, but that is not a very solid kind of thing on which to build the future of many, many employees and many stockholders.

Our concern with Government contracts, I think, is answered with S. 2171, because you can see that the real opportunity for a company such as 3M is what can we do in terms of new products, new businesses, new jobs, and so on. It has been implied that the only thing brought to the party in all of this is Federal funds. The fact of the matter is, we have expertise, we have people who are excited, we have scientists, we have facilities, we have equipment, we have manufacturing know-how, we have market interest, and all of that, of course, becomes part of the pie when you are trying to build a new business or find a new product. The new business must be based on technology in which only the initial implication of the research contract is that a patent may come out. If you have the patent rights, you then have an opportunity to build that business, find that new product, find those new jobs and so on, because the risks and all the money which the company has put in, or has implied in its participation, is protected for that period of time in which it takes to establish a business. Businesses are not established overnight, and new products are not introduced overnight.

So, very simply, I would like to say that we support S. 2171 as an indication of the Government's interest in seeing that the fruits of

its R&D contracts are brought to commerce, industry, and therefore to the public in general.

Senator DOLE. I would like to ask you one question. Are you concerned about the issues raised by Senator Metzenbaum?

Dr. ADAMS. Well, if we were talking about the subject of bidding for a patent, we would not bid. It is a capricious intrusion by somebody who may be a competitor and who would like nothing more than to cause you some difficulty by bidding a dollar more than you bid, or getting you to raise the ante. Personally, I think Senator Metzenbaum is looking at only one side of the coin, and I certainly sided with Mr. Merrifield in his comments; the leverage is tremendous, if you get somebody doing something, and that is what we are talking about.

Senator DOLE. Well, I think that is probably going to be raised by other members, and I think it is helpful to have that.

[The following material was received for the record:]

PREPARED STATEMENT OF ROBERT M. ADAMS

Mr. Chairman, and Members of the Committee,

My name is Robert M. Adams, from St. Paul, Minnesota. I appreciate the opportunity to appear before this distinguished committee to discuss the aspect of the Uniform Patent Procedures Act of 1983 dealing with patent righ in inventions arising from federally supported research and development ("R & D"). My purpose in being here today is to present the views of Minnesota Mining and Manufacturing Company (3M) - a company with a vital interest in innovation. Specifically, I will speak in support of legislation under which large businesses performing Federal R & D may retain title in inventions they make as is now the case with small businesses under the present law, Public Law 96-517.

I am Senior Vice President, Technology Services, of the 3M Company and I have been with 3M for 35 years. In this capacity I am directly involved in formulating the policy of 3M toward federally supported R & D.

3M was founded 82 years ago on the North Shore of Lake Superior. Like many new businesses, it struggled for many years just to stay in business. It was saved from floundering in its early days, however, by the patented inventions of waterproof coated abrasives (sandpaper). And making inventions and patenting them have been an integral part of our business ever since. Because we have made and exploited inventions, we have gone from adversity to diversity and have been able to satisfy the needs of our customers, provide jobs, and pay taxes.

Today, 3M is a large multi-national firm with nearly 90,000 employees in the United States and 50 countries abroad. We are a diversified, highly integrated, worldwide manufacturer and distributor of technology-based products in 45 major product lines. The most important 3M technology is probably precision coating and bonding, with applications in the manufacture of such diverse products as coated abrasives, photographic film, pressure sensitive tapes, and health care products.

Our total laboratory organization comprises laboratories in the United States and abroad, employing more than 6000 men and women who, in their R & D endeavors, spent nearly $400 million in 1983 (roughly 5.5 percent of 3M's $7 billion in annual sales) and over $1 billion in R & D over the last 5 years.

There are a number of ways to measure the effectiveness of research. One way is to measure the contribution of new products and businesses to annual sales: in 1983, our new product sales compared favorably with our goal of generating 25 percent of sales from products introduced within the last 5 years. Another measure is the number of inventions: to protect its investment in R & D and its new products, 3M files between 200 to 300 patent applications in the United States alone each year.

The Federal Government spends tens of billions of dollars for R & D each year. There are many thousands of contractors involved in this effort. However, the dollar amount of 3M's federally funded R & D contracts, when compared to these billions of Federal funds and 3M's total sales, is very small. 3M does not depend upon fees from Federal R & D contracts for its income.

For the most part, potential contractors in

industry are the high technology companies - companies that are often coveted by federal agencies for performance of federally funded R & D. But many of these companies, like 3M, are often the hardest to convince to take on such R & D work.

One reason is because such contracting activity reduces substantially the degrees of freedom normally associated with a "supply and demand" marketplace. Under a Government R & D contract, 3M, for example, would have to comply with a form of control by the Government, which decides what will be researched, how it will be researched, and for how much money.

Another reason is that the profit for performing Government R & D contracts is usually in the nature of a fixed fee falling in a limited range of negotiability which generally does not equal the greater potential profit sought by the sale of new products derived from self-funded R & D programs.

These reasons for avoiding Government R & D contracts may be overcome if the potential for a new product is great enough. Nevertheless, many companies are reluctant to take on federally funded R & D contracts because they will tie up the company's primary or best qualified, productive research and development employees and equipment on work that will not generate profitable products protected by company-owned patents - the type of patented product that companies hope to sell. Often 3M is reluctant to do Government R & D work because of our concern with those provisions of Federal patent policy which withhold the full incentives of the patent system that 3M and many other companies employ to strengthen their business. Specifically, I am speaking about those provisions of the present

law which deny large businesses the ownership in patents covering inventions they make as contractors under Government R & D contracts.

The standard patent clauses of the governing statutes or regulations of many of the various Federal agencies require contractors to give title to the Government to inventions made under the Government R & D contracts. Such standard clauses would deprive 3M of the intellectual property rights which normally accrue to it from its privately funded R & D operations. Thus, such standard patent clauses are usually unacceptable to 3M.

If the subject matter of a Government R & D contract relates to a business area where 3M has expended its own funds, and the performance of the contract portends expansion by 3M of that business area, 3M will seek to have such patent clauses modified to give 3M greater patent rights than the agencies normally grant (and are accustomed to granting). Specifically, 3M will seek title to inventions made by it under the contract. In some instances this can be negotiated favorable to 3M because of the permissible waiver of the title policy by certain agencies. But, without title to 3M in such inventions, 3M may and often does decline such contracts.

The title policy can also have some effect on the career and recognition of a contractor's research people, since their success and recognition with a high-technology company is often linked directly to profit, and profit is often linked directly to new products covered by patents owned by the company. When large firms enter into Government R & D contracts based on the present title policy, their inventor-employees who are assigned to such contracts may be less motivated or not encouraged to invent,

or even exert a superior effort, knowing their inventions are destined for Government ownership and will probably languish as noncommercialized inventions.

Large firms, like 3M, which have specialized skills and background and prior investment in technology of interest to the Government, and which employ the incentives of the patent system, will thus continue to shy away from contracts based on the title policy of the Government. Only those firms which are driven by economic necessity, or which perhaps are less qualified to perform the R & D efforts of interest to the Federal agency, will take such contracts. Such title policy contracts will continue to inhibit innovation (already in decline in many sectors of industry) and interfere with or limit the commercialization of technology and the transfer of its benefits to the public.

3M, and we believe industry in general, supports legislation which extends the title feature of P. L. 96-517, "The Patent and Trademark Amendment of 1980", to large business as well as small business and the incentive of invention ownership in inventions it makes in performance of Government R & D contracts.

Giving universities, nonprofit organizations, and small businesses such rights, though laudable in itself, is not an adequate means for the Government to increase participation in federally funded R & D by large firms, like 3M, with a wealth of R & D skills, expertise, and resources built up over many years by seasoned teams on a scale not enjoyed by small businesses. Unless the license policy of P. L. 96-517 is extended to businesses without discriminating as to their size and tax status, many large firms will be reluctant to accept contracts with Federal

agencies which follow the title policy or will continue to contract with them on a limited scale. We believe this practice is not in the public interest of the Nation as a whole.

By this legislation, S. 2171, government-industry links would be established to move technology more rapidly into the private sector much the same way that university-industry cooperation was enhanced substantially by the enactment in 1980 of the University and Small Business Patent Procedures Act (Public Law 96-517), which provided for university ownership of inventions made in performance of federally funded research. This important law cleared away years of bureaucratic red-tape that hampered university technology transfer efforts by clouding the ownership of inventions made with federal funds. With this cloud removed, university-industry cooperation--so long frustrated by outdated government policy--exploded.

A law such as P. L. 96-517 alone does not help to sufficiently promote the utilization of inventions arising from Federal R & D contracts, or encourage participation in such contracts, or promote commercialization of such inventions, because large businesses are omitted in such law. Though some Federal agencies under their present regulations may give title to such inventions to large business contractors under some circumstances, those agencies may read into this omission of the law an intent by Congress that large firms should be precluded from obtaining title to such inventions under any circumstances.

The rationale and incentives of the title feature of P. L. 96-517 logically should be no less applicable in the case of large firms--they should not be discriminated

against with respect to Government patent policy. The full benefits of the incentives of the patent system should be made available to all contractors when they undertake federally funded R & D contracts.

Finally, it is interesting to note that the Japanese have indicated a concern that the President's policy and the Dole bill will curtail free access to our publicly funded discoveries. Under present policies, too often federal gencies retain patent ownership and then destroy the domestic value of the invention by offering licenses to all comers. Such policies, along with the reams of technical information routinely made available by our government, has been a valued resource to our foreign competitors. The President's policy and its extension by Senator Dole's bill will not only encourage the domestic development and commercialization of federally funded technology, but will create a need for foreign competitors to negotiate the use of the technology with its owner.

Mr. Chairman, I sincerely appreciate this opportunity to present these comments.

General Offices/3M

3M Center
St. Paul, Minnesota 55144
612/733 1110

3M

April 24, 1984

The Honorable Robert Dole
327 Senate Hart Office Building
United States Senate
Washington, D. C. 20510

Dear Senator Dole:

Re: S. 2171

Thank you for offering to receive further written comments for the hearing record on S. 2171. While your staff was given a copy of our more detailed comments, I enclose another to be sure that it is included.

Your letter raises five questions to which I should like to reply one by one. I have done this in the enclosure marked Questions and Answers.

Thank you for your continued interest in this subject.

Sincerely yours,

Robert M. Adams
Senior Vice President
Technology Services

* * *

QUESTIONS AND ANSWERS

1. Is there any national interest served when a highly innovative company like 3M is discouraged from bidding on a Government contract for fear of losing patent rights? Would innovative companies in general be afraid to use their best technologies on Government work if they are afraid of losing resulting patents? Why?

   Answer:

   It is not in the national interest to discourage highly qualified companies with large research and development staffs from bidding on appropriate Government contracts. In the case of companies with records of innovation, such as 3M, the principal motivation in a Government contract is the opportunity to learn something new and to adapt that knowledge to the marketplaces they serve. It is in the Government's best interest to afford the protection of the patent system to its contractors during the heavy investment period of commercial introduction.

2. American industry has been very interested in working with universities since the passage of P.L. 96-517. What do you think would be the result if the current licensing restrictions limiting university patent licenses to 5 years to large companies was removed? Would you be encouraged to collaborate with state innovation centers and the labs? Would the public benefit from this interaction?

   Answer:

   This question makes an assumption that increased industrial interest in working with universities is due to P.L. 96-517. While this may be true in part, I think the closer relationship between industries and universities is more due to the rapid progress of technology and a desire by industry to be closer to the leading edge. Nevertheless, if current licensing restrictions were removed, it would encourage more such interaction.

3. In general, how attractive are Government owned inventions to the private sector? If U.S. companies are reluctant to use Government funded inventions, does that benefit our foreign competition?

   Answer:

   Government-owned inventions are generally of little appeal to private industry except in aerospace and defence areas. The reason is that licenses are almost always non-exclusive and provide very little

protection during the period of heavy investment in product development, initial manufacturing, and marketing. Since this is the situation, there is little protection against competition, including foreign competition.

4. Have you heard of an invention being discovered in the U.S. and developed overseas by a foreign firm because of lack of patent protection here? How does this impact on the average working American?

   Answer:

   I have no specific example to cite, but the number of visiting Europeans and Japanese to National Laboratories suggests that they find a lot of useful information from these sources. To the extent that such information is included in the design of commercial products, the United States loses jobs and favorable balance of trade.

5. Could you please respond to the argument that enactment of S. 2171 will create incentives for contractors to withhold information from the Government?

   Answer:

   On behalf of my company and myself, I express our feeling of insult at the implication that contractors would withhold information from the Government on patentable inventions as a result of S. 2171. Perhaps the people raising this objection know of or participate in a different ethical climate than most of the companies with which I am familiar. In addition, the Federal Government is always well represented by contracting officers and by technical specialists who are thoroughly familiar with the work being done. This sounds like an argument aimed at avoiding responsibility.

   Perhaps your Committee should recognize that there are differences even among large companies. More importantly, the Committee should recognize that there is a great deal of difference between those companies who depend upon aerospace and defense contracts and those whose interests are much narrower and much smaller.

General Offices/3M

3M Center
St. Paul, Minnesota 55144
612/733 1110

May 8, 1984

3M

The Honorable Charles McC. Mathias, Jr.
United States Senate
Washington, D.C. 20510

Dear Senator Mathias:

Re: S. 2171

Thank you for your letter of April 20, asking for my response to the following question submitted by a member of the Subcommittee directed to my testimony on March 27, 1984:

You express concern in your testimony that the large companies with the most developed facilities and expertise, may be rejecting Government R&D work because they do not retain patent rights in inventions developed under Government contracts. Currently about 95% of all Government R&D contracts are granted through NASA, DOE, and DOD. All these agencies are authorized by law to grant waivers that give exclusive title to contractors who develop inventions under Government contracts. Further, all of them operate under the presidential statement on patent policy of February 1983, which encourages them to grant exclusive title to contractors. According to agency estimates DOE grants advance waivers to approximately 80% of large businesses who request them, NASA grants approximately 95%, and DOD has a policy to prefer waiver over retainment of title. Given this current situation and the presidential statement, why do we need S. 2171?

Below is my reply.

Although a contractor might (or even probably will, as the percentages in the question indicate) get the same result by successfully going through the waiver procedure as he would if S. 2171 were enacted -- namely, the retention of title in inventions he makes in the course of a federally-funded R&D contract -- it will be at considerable cost in time and effort. The waiver procedure is a sparkling example of the "bureaucratic maze" and "chaotic and inefficient agency procurement policy" that Senator Dole highlighted in introducing S. 2171, a bill drafted to provide a unified and simplified Federal patent procurement policy.

The problems highlighted by Senator Dole are well-known and of long-standing. The recently promulgated Federal Acquisition Regulation (FAR) represents an attempt in the procurement area to eliminate confusion caused by differing policies among the Federal agencies. Senate bill S. 2171 is an important and forward-looking piece of legislation which, when enacted into law, will go far to eliminate time-consuming and unnecessary confusion from entering into Government R&D contracts. It will also, in my opinion, attract a broader spectrum of contractors from the private sector than that which has sought such contracts in the past.

The waiver procedure of the DOE, with which 3M has had some particular and recent experience, is a case in point. Even if the contractor knows how this red taped, unnecessarily complicated waiver procedure works, the very effort and 80/20 uncertainty of success act as disincentives to contract. If time is of the essense, as it often is in these contract matters, the waiver procedure is especially bothersome in that you either wait until the red tape runs its course or you enter the contract with it being contingent upon the waiver being granted (not a comfortable matter for the contractor or procuring agency).

While the Federal agencies cited in the question may, under their present waiver regulations or policies, give title to such inventions to large business contractors under some circumstances, those agencies may read into the omission of large firms from the present law an intent by Congress

to preclude large firms from obtaining title to such inventions under any circumstances, or find other similar ways to selectively deny waivers.

We most definitely do need S. 2171. The present bureaucratic red tape of waiver policies and procedures have a chilling effect on Federal R&D contracting by large firms, particularly those firms whose expertise has heretofore been developed independently of significant Government funding.

With the enactment of S. 2171, cooperation between large business and the Federal Government in federally-funded R&D would be enhanced in much the same way as that which resulted from enactment of the University and Small Business Procedures Act (Public Law 96-517).

Very truly yours,

Robert M. Adams
Senior Vice President
Technology Services

Senator DOLE. Mr. Riley is from Ohio, so maybe we ought to hear from him.

STATEMENT OF WILLIAM E. RILEY, JR.

Mr. RILEY. Thank you, Mr. Chairman.

Mr. Chairman, the Licensing Executives Society, USA, Canada—LES—strongly supports S. 2171 which is now being considered by this committee. I think your staff is fairly familiar with LES, therefore, I will not go into a lot of background. Basically we are the leading professional organization concerned with technology development and transfer throughout the world.

LES is convinced that a uniform patent policy as proposed in S. 2171 would do much to maintain U.S. innovative leadership, ensure that more Government-sponsored technology is brought to the public, and make available to the Federal Government vast sources of technical talent that it does not now have because companies shun or entirely avoid Government-sponsored R&D. When because of the present Government patent policy—some companies do this, we believe—the Government loses and the public also loses. Also, since a truly fair and uniform patent policy will make Government contracting much more attractive to such companies, it would result in more competition for Government R&D. We think this would be a healthy situation.

Our opinion is that the safeguards provided in S. 2171, plus the existing antitrust statutes, fully protect the public against any abuses that may occur.

In summary, we are convinced that the enactment of the legislation will play a significant part in helping the United States maintain its presently threatened world leadership in technical innovation. Thank you.

[The following material was received for the record:]

Prepared Statement of W. E. Riley, Jr.
on Behalf of the Licensing Executives Society USA/Canada (LES)

Licensing Executives Society USA/Canada (LES) strongly supports S. 2171 now being considered by this Committee.

For your information, LES is a nonprofit, professional and educational organization comprised of members actively involved in the field of technology development and transfer. It is a business-oriented Society of about 1800 members from industry, law firms, universities, research institutes, and various Government organizations. There are sister LES Societies in many other countries throughout the world. It has been estimated that LES members are involved in over 85 percent of worldwide technology transfer.

LES supported the legislation that led to P.L. 96-517, and since that time has continually advocated a uniform Government patent policy for the United States. We are convinced that such a policy would do much to maintain U.S. innovative leadership, ensure that more Government-sponsored technical development actually benefits the public, and make available to the Federal Government vast technical talent in companies that now shun Government contracts.

It is doubtful that anyone with direct experience involved could argue that P.L. 96-517 has not increased the innovation incentive with respect to the organizations covered by that Law. If that premise is accepted it makes no sense whatsoever to deny the same incentives to other organizations in this country strictly because of their size or because they do not meet requirements established for reasons that have no direct relationship to technology development and commercialization, e.g., such things as the IRS, 501-C-3 definition and requirements to be considered as small business.

Organizations currently denied rights of the type contained in P.L. 96-517 possess some of this country's greatest assets of technical talent and have proven they have the resources necessary to bring technology to the public. Yet, because of present Government patent policies some of these companies shun or entirely avoid becoming involved in Government-sponsored R&D. We believe this to be a serious loss to both the Government and public. We also believe the passage of S. 2171 would do much to remedy this situation.

37-360 O—84——12

To claim that the lack of assured Government patent rights is driving all contractors out of the Government research market is stretching a point. Some organizations have been successful as a primary result of Government contracts and to many others Government research represents an attractive business opportunity. Most of these would not cease to seek Government contracts if they are not granted title to resultant patents. However, we are convinced that a truly fair and uniform patent policy will make Government contracting much more attractive to many other companies and thus result in more competition for Government R&D. That would be a healthy situation.

Some in the Government have claimed the public is better protected when the Government has complete control of intellectual property generated under its sponsorship. Our opinion is that the safeguards provided in S. 2171, plus existing antitrust statutes, are more than adequate to address any abuses that may occur. Thus, it is our opinion that if this legislation is enacted, the public will not only be sufficiently protected but also will be better served.

In summary, Mr. Chairman, LES is convinced that enactment of this legislation will play a significant part in helping the United States retain its presently threatened position as the world's leader in technical innovation.

LICENSING EXECUTIVES SOCIETY, INC.
U.S.A. and Canada
A Member Society of The Licensing Executives Society International
P.O. BOX 1333, STAMFORD, CT. 06904

April 19, 1984

The Honorable Robert Dole
327 Senate Hart Office Building
United States Senate
Washington, D.C. 20510

Dear Senator Dole:

Re: S. 2171

The following are my personal answers to the questions raised by your staff in your letter of April 6, 1984.

1. Is there any national interest served when a highly innovative company like 3M is discouraged from bidding on a government contract for fear of losing patent rights? Would innovative companies in general be afraid to use their best technologies on government work if they are afraid of losing resulting patents? Why?

   Answer:

   To the contrary, I think it is a disservice when highly innovative companies are discouraged from bidding on Government contracts for fear of losing patent rights. As indicated in my testimony, these companies possess some of the nation's best technical resources. If they became interested in bidding on Government contracts it would mean more competition. That would be a healthy situation and help ensure that the Government obtained the best talent to do a particular job. Also, most of these companies have demonstrated that they have the resources to commercialize new technology. Thus, their participation would probably result in more Government sponsored inventions being in public use.

2. American industry has been very interested in working with universities since the passage of P.L. 96-517. What do you think would be the result if the current licensing restrictions limiting university patent licenses to 5 years to large companies was removed? Would you be

encouraged to collaborate with state innovation centers and the labs? Would the public benefit from this interaction?

Answer:

I can only address the exclusive license 5 year limitation. I believe it to be impractical. In my experience I have never seen a technology, even when it was simple and there were no regulation problems involved, commercialized less than 3 years after the invention was made. Even in such cases the company involved would have only 2 years guaranteed exclusivity and those 2 years are generally not very big ones because of introductory problems. If you consider more complex technologies as well as those that require regulatory approval, it becomes more apparent that a 5 year exclusivity is not sufficient.

3. In general, how attractive are government owned inventions to the private sector? If U.S. companies are reluctant to use government funded inventions does that benefit our foreign competition?

Answer:

Since my experience has been concerned with the licensing out of technology, I cannot address this question directly. However, I have heard this problem discussed by many others over the years. It is my opinion that if you were to take a private survey of companies involved in licensing technology from the Government, you would find overwhelmingly that they would rather be dealing with private industry or a university.

4. Have you ever heard of an invention being discovered in the U.S. and developed overseas by a foreign firm because of lack of patent protection here? How does this impact on the average working American?

Answer:

I have no experience on which to address this question.

5. Could you please respond to the argument that enactment of S. 2171 will create incentives for contractors to withhold information from the government?

Answer:

I emphatically disagree with that argument for two basic reasons.

- The legislation as proposed creates an incentive for contractors to disclose inventions to the Government.

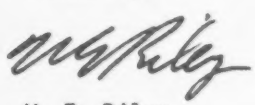
- I personally believe that an implication that big companies would be more inclined to withhold information from the Government than small businesses or nonprofits is unfair and highly insulting to U.S. corporations.

  Pragmatically, there are bound to be some cheats in any system. However, I don't believe there is any basis whatsoever for believing that the chance of being cheated increases with organization size. In fact, I could argue that the Government probably stands less chance of being cheated by large corporations than it does by small businesses or, in fact, universities. In a large company it is unlikely that such withholding of information could take place without an actual conspiracy on the part of several key people in that organization. If such cheating were suggested it is likely that at least one of them would give serious thought to the possibility of spending time in a federal prison. Senior staff members in big corporations are very sensitive to this type of thing because of antitrust regulations.

  If there is an inclination to withhold information it would be much easier to form a conspiracy in a small business where perhaps only the inventor and the president would have to be involved.

Thank you for the opportunity to respond. Please contact me if you have other questions.

Sincerely,



W. E. Riley

Senator DOLE. Again, I would say to the entire panel, I hope you can help us to stimulate a little more interest on the House side. I think this is very important legislation. I think we can pass it in the Senate, despite some reservations. But we are going to need some help on the House side.

Mr. Carey?

STATEMENT OF WILLIAM D. CAREY

Mr. CAREY. Thank you very much, Senator. I think this has been a pretty harmonious morning.

I represent the American Association for the Advancement of Science, and I welcome the legislation. In a previous life, I worked in the Bureau of the Budget, and in 25 years there, this very debate surfaced and disappeared and resurfaced with regularity, and it always wound up in the same place—at a standstill. So I very much like to see this bill. I think it is needed.

As far as the giveaway question is concerned, it seems to me that instead of sitting on nonproducing assets, the Government is going to put those assets to work for the economy. It is a sensible approach, and it does recognize that all those years of stockpiling rights to inventions has meant foregoing economic benefits and investments in R&D.

The budgets, as you know—there was some comment on that this morning—budget authority for R&D in the President's 1985 budget is $54 billion. That is an awful lot of growth, and I just simply want to say that private venture capital is certain to be looking for opportunities to invest in promising technologies if they are accessible, and much of this Government R&D will produce those opportunities. So I very much encourage the committee. I compliment you, Senator, for your initiative.

My prepared statement, in view of the condition of the clock, will have to suffice.

[The prepared statement of Mr. Carey and his response to a written followup question follows:]

Prepared Statement of William D. Carey

Mr. Chairman and Members of the Subcommittee:

I am glad to respond to your invitation to testify with regard to S. 2171, the Uniform Patent Procedures Act. My statement will be brief. As you know, I am presently the chief operating officer of the American Association for the Advancement of Science but my statement today expresses my individual views.

I welcome this legislation. If enacted, it will instill order into government patent policies in place of agency confusion and inertia, and it will take an overdue step towards more effective realization of economic returns from government-sponsored scientific research and development.

I don't need to tell you that the bill addresses a long and lingering controversy as to where the public interest lies relative to rights in inventions resulting from government-assisted research and development. During the 25 years of my own Executive Office service, that issue surfaced, disappeared, and resurfaced with regularity and always wound up in the same place, at a standstill.

Through all those years, Presidents requested and Congress voted annual increases for R&D, swelling the imputs side while taking for granted the outputs or benefits. This worked very well in producing new knowledge, but government has not been very successful with technology transfer -- the practical side of converting new knowledge into practical uses beyond those of the mission agencies.

What this bill, like its predecessor P.L. 96-517, undertakes to do is to finally remove a barrier to technology transfer. It departs unmistakably from passivity and the hoarding of rights to inventions, and unleashes the outputs of its research and development investment for timely entrepreneurship and utilization. Instead of sitting on nonproducing assets, the government will henceforth put them to work for the economy. It is a sensible approach, not a giveaway because it recognizes that all the years of stockpiling rights to inventions has meant foregoing economic benefits and investments in research and development.

The provisions of the bill are carefully drawn. They allow grantees and contractors to retain rights to inventions provided those rights are exercised in a timely way, and they empower government to recapture and dispose otherwise of these rights if the contractor fails to exercise them. The bill goes

farther to make the opportunities attractive by modifying the existing requirement for surrender of the contractors' background rights, a requirement that certainly has impeded hot pursuit of inventions. National security considerations are protected appropriately, and agencies are authorized to limit or wihhold the ownership right under exceptional circumstances. This is very good legislation.

It is also timely legislation. In the President's 1985 budget, Federal support for R&D will rise very steeply, with budget authority at an all-time high of $54 billion. Much of this research and development will be focused on leading-edge science where the potential for invention and innovation is high. Private venture capital is certain to search out opportunities for investment in promising technologies, provided they are accessible.

If government can begin to wheel its scientific and technological assets into position to augment the market economy's reach for innovation, it will contribute to economic growth, the startup of new businesses, and new product and component lines as well as improvements in process manufacturing. I do not want to say that your bill by itself will resolve all of our nation's macroeconomic problems, but I do say that in reshaping patent policy and procedures it would make a positive and substantial contribution.

I'd like to add that I served recently on an Energy Department panel to evaluate the national R&D laboratories including Argonne, Oak Ridge, and the others. These are funded by the government at very high budget levels, and they are operated by either universities or industrial firms acting as government contractors. The national laboratories comprise an unbelievably rich concentration of talent and scientific versatility dedicated to high-risk, advanced research and development.

However, in my opinion these exceptional facilities have not had the necessary incentives to transfer their skills and know-how to the private sector. There is something very wrong about this deficiency. Part of what is wrong is the present patent policy restriction on invention rights, and I would encourage the Committee to see to it, in the context of the bill we are discussing, that these government-owned but contractor-operated national laboratories are permitted like other R&D contractors to hold the rights to their inventions under the same conditions and be expected to actively exercise them. I believe the benefits to private sector innovation will be quite significant.

In conclusion, I commend the bill's sponsors and urge its early enactment.

American Association
for the Advancement of Science

1776 MASSACHUSETTS AVENUE, NW, WASHINGTON, D. C., 20036

Phone: 467-4400 (Area Code 202) Cable Address: Advancesci, Washington, D. C.

May 18, 1984

The Honorable Charles McC. Mathias, Jr.
Chairman, Subcommittee on Patents,
Copyrights and Trademarks
Committe on Judiciary
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

This is in response to your recent letter asking a follow-up question to my testimony on S. 2171. The question was stated as follows:

> You state in your testimony that by abolishing the existing requirements for contractors to surrender "background rights" in order to secure R&D contracts, we will encourage the "hot pursuit of inventions." Isn't it true that the background rights policy is used by agencies to enhance the commercialization of technology by forcing contractors to share information that they have, but are not marketing, with other business in the industry? Doesn't the abolishment of this policy actually serve to inhibit the flow of technology transfer?

While it is true that some agencies, such as the Department of Energy, have been particularly aggressive in negotiating the acquisition of background rights under the premise of making all information -- background and foreground -- available to all potential users, this does not mean that this approach has been good public policy or has been in the national interest. It seems to me that those who argue for the surrender of "background rights" should develop the case for this point of view, and not simply argue that a change will be detrimental.

The implied case, as expressed in the question, seems to be based on encouraging the flow of technology transfer. But the record of the past thirty or forty years hardly seems to show that the results have been positive for what has been national policy during these years. Indeed, the record is one which suggest less than effective use of technology produced as a result of government-supported R&D -- as was well documented during your hearings. Further, the question seems to suggest that the major purpose of patent policy is to advance some abstract concept of technology transfer, rather than to help support measures which will introduce the application of technology in the form of useful products and processes.

This question is also related to another feature of patent policy: the current disincentive of significant holders of background information in various scientific and technical areas to engage in federally-supported R&D for fear of losing these valuable rights to third party competitors. This fear seems to serve as a serious barrier to government access to various types of technologies.

Finally, there is nothing in the proposed changes in the pending patent legislation (S.2171) which would preclude the commercialization of technologies -- including those involving background rights -- through mutually arranged licensing agreements. As you are aware, this is a

common occurence in business -- domestically and internationally -- and accounts for substantial flows of technology under economic terms which are considered fair by all parties involved. There is an inherent lack of fairness in a policy which takes "background rights" without adequate compensation or protection.

In summary, I would again urge the Committee to take prompt action on S.2171.

Sincerely,

William D. Carey
Executive Officer

Senator DOLE. I appreciate that. I think we probably are sitting on a lot of unused potential.

Mr. Mogavero.

STATEMENT OF LOUIS MOGAVERO

Mr. MOGAVERO. Thank you very much, Senator.

By way of background information, I would like you to know that I was formerly NASA's technology utilization director, and I am currently president of Trantek, and my job is and has been for a number of years to transfer federally funded technology to the private sector. There is no doubt in my mind at all that we here are all trying to improve our country's productivity and economic well-being, but there are certain parts of this act to which I must voice my objection.

I am going to focus my remarks on that portion of the act which proposes to amend the National Aeronautics and Space Act of 1958 because it repeals subsections 305(a) and 305(b). Currently, as those subsections are constructed, any inventions which are developed by a contractor as a result of Government financing shall become the exclusive property of the United States, and any new technologies similarly developed, whether they qualify for patents or not, shall be reported to the NASA Administrator, and this bill, S. 2171, repeals those parts of the Space Act.

These two subsections were structured specifically to respond to the Space Act provisions that NASA should provide for the widest practicable and appropriate dissemination of information concerning its activities and results thereof. It is this part of the Space Act that provides a mechanism for the private sector of the economy to gain access to the vast reservoir of knowledge it pays for through its tax dollars, and it is this section that is most affected by S. 2171.

If a contractor is no longer required to make known innovative discoveries resulting from its Government contracts, how, then, can we achieve widespread dissemination mandated by the Space Act?

In fact, Mr. Chairman, due to its experience in this area, NASA contracts contain provisions for penalties if a contractor does not report innovative technologies resulting from Government-sponsored research. If we remove these penalties, how can we expect the reporting of new technologies to increase?

I think you will agree that there will be a great temptation presented to the contractor not to reveal new technologies to its competitors, or even to brokers like myself—even though he has no immediate plans for exploiting the technology for himself. The fact that the provisions of this proposed act will allow the contractor to withhold from public access patents and/or new technologies paid for by the public at-large places pressure on the innovator's sense of public responsibility. Indeed, what will be his motivation to do so, particularly if the new technology is not within his current or future product line?

Who then should be responsible to at least inform the public of the availability of information? In my view, it is the Government's responsibility, and certain provisions of this act will make no one responsible.

I completely agree with, and I support the committee's efforts to make changes which are aimed at improving our Nation's competitive position. And most of what is contained in the bill will work toward that end. But I must voice my concern for those provisions of the act which will allow innovative discoveries to be controlled and perhaps hidden from public knowledge by contractors who gain this advantage through the use of public funds.

What suggestions do I offer?

First of all, remove or moderate the frustrating bureaucratic maze that you, Senator Dole, refer to in your proposal. Concentrate on making it easier for people to acquire the rights of Government-owned patents.

Second, support and expand those efforts aimed at informing the public of the availability of new technology, even though they are not protected by patents.

And third—and in my opinion, the most important—let's put our best minds to work on developing effective mechanisms to prevent access of our technology to foreign competitors. I am in the business of transferring technology, and I can tell you it is much too easy for a determined competitor to get technology which should be restricted.

In conclusion, Mr. Chairman, let me repeat—this bill is needed, and most of it will accomplish its objectives. But let's not throw the baby out with the bathwater. In some cases, the Government could be paying twice for research if public knowledge is not fostered.

Thank you for listening, and I would be glad to respond to any questions you might have.

[The following material was received for the record:]

PREPARED STATEMENT OF LOUIS MOGAVERO

I would like to begin my testimony by thanking the chairman and members of this committee for allowing me the opportunity to express my thoughts regarding the Uniform Patent Procedures Act of 1983. I know how valuable your time is so I will be brief, but to the point.

By way of background information, I was formerly the Director of NASA's Technology Utilization Office, and am currently the President of Trantek Inc. In both positions my activities focused on accelerating the movement of federally funded technologies into private sector industries.

Although there is no doubt in my mind that we here are all motivated to improve our country's productivity and economic well-being, there are certain aspects of this Act which may well work against these goals and should be discussed before the bill is enacted.

My remarks will focus on that portion of the Act which proposes to amend the National Aeronautics and Space Act of 1958 by repealing subsections 305 (a) and (b).

As currently constituted, these subsections provide that (a), any inventions which are developed by a contractor as a result of government financing, shall become the exclusive property of the United States and (b), any new technologies similarly developed, whether they qualify for patents or not, shall be reported to the NASA Administrator.

These two subsections were structured specifically to respond to the Space Acts provision that NASA " provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof".

It is this section of the Space Act which provides a mechanism for the private sector of our economy to gain access to a vast reservoir of knowledge it paid for through its tax dollars. And it is this section most affected by S.2171.

If a contractor is no longer required to make known innovative discoveries resulting from its government contracts, how then

will we achieve "widespread dissemination" mandated by the Space Act? In fact, Mr. Chairman, due to its experience in this area, many of NASA's contracts contain provisions for penalties if a contractor does not report innovative technologies resulting from government sponsored research.

If we remove these penalties how then can we expect the reporting of new technologies to increase?

I think Mr. Chairman you will agree that there will be a great temptation presented to the contractor not to reveal new technologies to his competitors, or even technology brokers like myself, if he feels threatened by possible competition, even though he has no immediate plans for exploiting the technology for himself.

The fact that the provisions of the proposed Act will allow the contractor to withhold from public access, patents and/or new technologies--paid for by the public at large--places pressure on the innovator's sense of public responsibility. Indeed, what will be his motivation to do so particularly if the new technology is not within the contractor's current or future product line?

Who then should be responsible to at least inform the public of the availability of this information? In my view it is the federal govenment's responsibility and certain provisions of this Act will make no one responsible.

I completely agree with and support the committee's efforts to make changes which are aimed at improving our nations competitive position--and most of what is contained in this bill will work toward that end. But I must voice my concerns for those provisions of the Act which will allow innovative discoveries to be controlled, and perhaps hidden from public knowledge, by contractors who gained this advantage through the use of public funds.

What sugestions do I offer?

First, remove or moderate the "frustrating bureaucratic maze" to which Senator Dole referred in his proposal. Concentrate on making it easier for people to acquire rights to government owned patents.

Second, support and expand those efforts aimed at informing the

public of the availability of new technologies, even though they are not protected by patents.

And third, and in my opinion the most important, put our best minds to work on developing effective mechanisms to prevent access of our technology to foreign competitors--it is much too easy for a determined competitor to get technologies which should be restricted.

In conclusion Mr. Chairman, let me repeat that this bill is needed and most of it will accomplish its objectives. But let's not throw the baby out with the bath water!

Thank you for listening to my comments Mr. Chairman and if there are any questions I will be happy to respond.

RESPONSES OF LOUIS MOGAVERO TO WRITTEN QUESTIONS OF SENATOR DOLE

Question. Would you agree that under present law, there are strong incentives for dishonest contractors to withhold information from the government, insofar as disclosure of new technologies to the government can result in the government claiming title?

Answer. First, we must establish that nowhere in my testimony did I refer to contractors as being "dishonest" if they legally withheld information from the government, such as disclosure of new technologies. It is important to understand that business people who are motivated to protect their company's interests are not necessarily dishonest. They are operating within their legal right not to allow a competitor access to potentially damaging information—somewhat like a taxpayer who uses every legal option available to reduce tax liabilities.

I believe S. 2171 provides that legal option.

Question. Section 215(c)(1) of S. 2171 requires contractors to disclose inventions to the government within a reasonable time. If the contractor fails to do so, he may lose title to the government. Won't S. 2171, in a sense, reduce incentives to withhold information from the government, since under this provision, if he does disclose the invention he will generally be able to keep title, but if he doesn't disclose, and gets caught, he may have to forfeit title?

Answer. Section 215(c)(1) of S. 2171 requires contractors to disclose inventions to the government within a reasonable time but it does not define what constitutes "reasonable". In the industrial competitive environment, time is more important than information. That is, many companies prefer to have a time advantage to get a new product to the marketplace as opposed to having all companies start together with the same information. Withholding information is one way of getting that time advantage. By the time the government gets around to a company that has withheld information, it won't matter because the product will be on the market and therefore the protection granted by a patent will have lost its value! What does the contractor have to lose, if as your question says, he "gets caught"?

Question. In general, is it wise to base government patent policy on the assumption that contractors will be dishonest. Don't we need to balance what I believe to be a slim possibility of abuse against the substantial benefits to be derived from increased commercialization of the fruits of government assisted research?

Answer. Again, the question of honesty is not appropriately applied to this situation. What is dishonest about a company withholding information if doing so gives it a competitive advantage and it is legal? S. 2171 provides that legal loophole

You are absolutely correct Senator, when you say that we need to increase the commercialization of the fruits of government assisted research. Not many people in government have been more dedicated than I in trying to achieve that goal. I have no objections at all to the intent of the bill—in fact I wholeheartedly support it! But that provision of S. 2171 which allows a contractor time to withhold information is

counterproductive. If the bill could be amended to define "timely disclosure", with appropriate penalties if not accomplished within that time period, then I believe the objectives will be more readily achieved. Failing this provision, I support full dislosure as provided for by the National Aeronautics and Space Act of 1958.

One other point needs to be discussed and that is the probability of government duplicating research it has already paid for. If a contractor is allowed to retain title to inventions without full disclosure before commercialization, then it is possible that a government employee, who is responsible for funding research projects, will not be aware of that research which has not been reported. This ignorance could lead to duplicative research.

Further, by amending that section of the Space Act which requires contractors to report innovative ideas resulting from government sponsored research that are not patentable allows this whole category of information to be withheld—legally.

I hope these points I have brought to your attention will be given serious consideration before the bill is enacted into law.

I repeat, the goals and objectives of S. 2171 will contribute significantly to our national productivity and worldwide competitive position. But some fine-tuning is required in those areas that do not provide for timely disclosure.

Thank you Senator for allowing me to share my views with you and if I can be of any assistance in your continuing efforts in this field, I will be happy to cooperate in any way I can.

Senator DOLE. What I intend to do is submit questions in writing, and we are working on the very area that you focused on, so we will see if we can moderate that somehow and work it out.

But if it is OK with members of the panel, we are not going to burden you with a lot of questions, but there are some areas we would like to address and try to refine in S. 2171.

Again, we appreciate very much your testimony. Your entire statements will be made a part of the record.

Thank you very much.

This concludes the hearing, and I think what we can do now is to move this into the full committee. I think we will have no difficulty in working out any problems in the subcommittee. We will move it to the full committee and, hopefully, get some action this year.

Thank you very much.

[Whereupon, at 11:55, the subcommittee was adjourned.]

APPENDIX

CORRESPONDENCE

American Chemical Society

OFFICE OF THE
PRESIDENT

Warren D. Niederhauser
President-Elect, 1983
President, 1984
Immediate Past President, 1985

1155 SIXTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
Phone (202) 872-4600

April 20, 1984

The Honorable Charles McC. Mathias
Chairman
Subcommittee on Patents, Copyrights,
and Trademarks
Committee on the Judiciary
United States Senate
Washington, D.C. 20510

Dear Senator Mathias:

The American Chemical Society (ACS), a nonprofit scientific and educational organization with a membership of over 130,000 chemists and chemical engineers, appreciates the opportunity to comment on S.2171, the Uniform Patent Procedures Act of 1983. Since many of our members are inventors, the subject of government patent policy is of vital interest to the Society. The following comments have been reviewed and approved by the Society's Board of Directors.

During the 96th Congress, the Society supported the enactment of P.L.96-517, which addressed the disposition of patent rights resulting from federally-funded research carried out by nonprofit organizations and small businesses. Although the Society supported enactment of that public law, it believed then, and continues to believe now, that title to the patent should be extended to all contractors, as there is little basis for differentiating between small and large contractors in this regard. The ultimate objective--exploitation of inventions resulting from government-supported research to serve the public good--should not be dependent upon the nature of the entity doing the research. ACS is pleased to see this matter being taken up again and urges the Subcommittee to act upon S.2171 in an expeditious manner.

The Society firmly believes that innovation will be fostered by a uniform government patent policy provided that such a policy encourages the commercial development of inventions and technological advances. Technological innovation underlies and supports modern society. Strong and continuous efforts to enhance and expand technological innovation result in high standards of living as witnessed through the history of the United States. Every effort should be made to encourage and strengthen technological innovation so that these benefits are maintained and expanded. Continued and consistent encouragement of innovation must be a national policy if we are to find solutions to increasingly complex social, economic, and environmental problems.

Patent policies differ markedly among agencies, particularly with respect to the determination of ownership of patents resulting from federally-funded research and development. These differences lead to uncertainties, have a dampening effect on invention and industrial innovation, and have resulted in underutilization of the results of federally-funded research. Hence, a uniform federal patent policy designed to foster industrial innovation is essential.

If disposition of rights under a patent resulting from federally-funded research and development is in doubt, or if the contractor cannot foresee a reasonable return from a successful development of the patented invention, then the benefits of the invention are less likely to be made available to the public whose taxes supported the original research. It is the Society's view that giving contractors assurance of exclusive rights would achieve greater utilization of these patents. The grant of exclusive rights in S.2171 is necessary to induce companies to furnish the additional funds needed for development and commercialization of inventions.

The ACS believes that, in general, the allocation of rights under S.2171 is fair. When the contractor elects to retain title to the invention, the government will have a non-exclusive, non-transferrable, irrevocable, paid-up license. In the few anticipated cases where the government will retain title to the invention, the contractor will have a non-exclusive, royalty-free, world-wide license, revocable only to the extent necessary for the government to grant an exclusive license to another party.

The provision for "march-in" rights in S.2171 appears to be reasonable. In a situation where the contractor is not taking sufficient steps to commercialize the invention, S.2171 allows the government to force the contractor to license a third party to do so.

ACS is aware of the argument offered by some who contend that to permit the contractor to take title to inventions made under federally-funded contracts, without reimbursing the government for at least part of its expenses, amounts to a "give-away" of public funds. The Society would not be opposed to a provision being added to S.2171 that would allow the government to recoup at least a portion of the original costs. Mechanisms for recoupment might be through the sharing of income accruing to contractors who have rights to inventions resulting from such research, or through other payments based upon the contractor's use of the invention. A reasonable arrangement might be to apply a negotiated percentage against gross royalty income or actual sales to produce a predetermined recoupment amount.

It should go without saying that recoupment procedures should be administratively workable and uncomplicated. Such procedures also should be established only after an opportunity has been provided for public comment, and after careful study of all views.

There are two provisions of S.2171, however, that cause great concern to the ACS. The first one would allow an inventor to obtain patent rights if a contractor does not elect to retain worldwide title to an invention. The extent of this proposal as presently drafted is not clear. The ACS urges that this provision be deleted, or that its language be developed in greater detail in order to define its scope.

The Society's second concern relates to subparagraphs "(b)" and "(c)" under the section on background rights. While subparagraph "(a)" states that S.2171 does not deprive the owner of any background patent or patent rights, the next two subparagraphs in effect authorize compulsory licensing. The ACS strongly opposes compulsory licensing to third parties of inventions owned by the contractor, when such inventions did not arise from federally-funded research.

In addition to the provisions concerning large businesses, S.2171 also modifies P.L.96-517 by removing the eight-year cap on the term of any exclusive license that a small business or non-profit organization can grant to a large firm. The ACS supports this proposal and believes that it will allow P.L.96-517 to fulfill its goal of promoting the utilization of the results of federally funded research.

In conclusion, the American Chemical Society believes that the subject of a uniform federal patent policy has been debated sufficiently over the years and that the time has now come for action. The Society is ready to provide any assistance it can to ensure swift consideration of this important legislation, and commends Senator Dole for introducing it.

Sincerely yours,

Warren D. Niederhauser

Warren D. Niederhauser

ANTI-GENE DEVELOPMENT GROUP
J. Summerton, General Partner
990 S.E. Marion
Corvallis, OR 97333
Phone (503) 753-3133

Senator Robert Dole
Hart Bldg., Rm. 327
Washington, D.C. 20510

May 8, 1984

Dear Senator Dole:

On March 7, 84 I wrote you (copy enclosed) concerning what I see as a serious flaw in past legislation dealing with patent rights to federally funded inventions - specifically, P.L. 96-517. My objective was to call to your attention the nature of that flaw and request that steps be taken to preclude incorporating the same flaw in your now-pending legislation - S. 2171, the Uniform Patent Procedures Act of 83. I further requested that you incorporate in your new legislation language which would correct the flaw in the earlier legislation (96-517).

On the advice of your staff member, Sheila Bair, I also contacted Joseph Allen, Assistant Secretary for Productivity, Technology, and Innovation in the Dept. of Commerce, in regard to this matter. Subsequently, Mr. Allen suggested, and Ms.Bair concurs, that I request that my letter to you dated March 7, 84, be placed in the hearing record as a basis for the legislative history of S. 2171. Further, as suggested I would appreciate the following language being placed in the legislative history: "Government licenses to subject inventions made with federal support are intended for agency purposes only and are not to be used for broad governmental programs such as Medicare, Medicaid, or other present or future civilian programs"

Thank you in advance for any actions you take in this matter.

Sincerely,

James Summerton

James Summerton, Ph.D.

ANTI-GENE DEVELOPMENT GROUP
J. Summerton, General Partner
990 S.E. Marion
Corvallis, OR 97333
Phone (503) 753-3133

Senator Robert Dole
Attn. Shiela Bair
Hart Bldg. Rm. 327
Washington, D.C. 20510

March 7, 1984

Dear Senator Dole:

Based on a recent article in the journal Science (copy enclosed) I understand that you are authoring legislation to extend to large businesses the same patent rights to federally funded inventions that were given to nonprofit organizations and small businesses via Public Law 96-517 - Dec. 12, 1980. From your staff member Sheila Bair I understand that this new legislation is titled "The Uniform Patent Procurement Procedures Act".

My purpose in writing this letter is to call to your attention a critical flaw in the earlier legislation (PL 96-517) and request that steps be taken to 1) preclude incorporation of the same flaw in your new legislation and 2) incorporate in the new legislation language which would correct the flaw in the earlier law.

To put the matter in context I'd first like to briefly summarize what I understand to be a principal purpose of both PL 96-517 and your current bill.

Following conception of an inventive idea and its first reduction to practice there generally remains a great deal of development and testing before a resulting product is available to the public. As a rule these later development, testing, and commercialization phases constitute greater than 90%, and often greater than 99%, of the total cost of bringing an invention to market. Further, federal funding of research is generally restricted to the initial conception and first reduction to practice. Rarely is federal support available for the very expensive development and commercialization phases.

The impetus for the 1980 law (96-517) was 1) recognition by congress that the federal government was rather unsuited for taking inventions in which it held title to the marketplace, and 2) the belief that the organizations actually responsible for making the inventions could most effectively pursue commercial development of said inventions.

If federally funded inventions are to be developed on a free enterprise basis (as opposed to federal funding of the development and commercialization phases) it is imperative that the organization involved in that development have an assured market exclusivity on the fruits of its development efforts - otherwise the required investment capital will not be forthcoming and the invention will be very slow to, or will never, reach the marketplace.

This exclusivity requirement is supposedly accomodated in the 96-517 law through provision that the inventing organization be given title to patents based on inventions made with federal support - provided said inventions are developed and commercialized with reasonable dispatch. However, that law also includes provisions to ensure that the government retain sufficient rights to meet the needs of the government and protect the public against nonuse or unreasonable use of inventions. Specifically, the government retains a totally unrestricted paid-up license to subject inventions as per PL 96-517 section 202(c)(4) which states: "With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, ... "

While this provision may appear to be fully justified on the grounds of fairness to the taxpayer, nevertheless, I contend that

the totally unrestricted nature of this retained governmnet license can severely damage the basic purpose of the entire legislation. My basis for this contention is that when a large investment is required for development and commercialization of a basic invention (particularily in the case of pharmaceuticals) such an investment from private sources can only be justified if substantial market exclusivity can be assured. The presence of a totally unrestricted government license raises the possibility that that license may be used to severely compromise or even destroy the patent protection afforded to the organization pursuing the development of the invention. Thus, as a consequence the mere presence of totally unrestricted government licenses can inhibit or prevent raising the capital needed to develop federally funded inventions into products available to the public.

I've enclosed correspondance which more fully illustrates an actual case where the retained government license is expected to be seriously detrimental to the stated objective of PL 96-517. That correspondance consists of my Oct. 30, 83 letter to Leroy Randall at National Institutes of Health (see particularily the second paragraph of page 3) and his Nov. 7, 83 reply, plus a letter to George Morning at the U.S. Small Business Adm.

Now, I'd like to suggest two alternatives to this unrestricted government license - either of which should more effectively achieve the objective of the law while also adequately protecting the taxpayers' interest.

First, very often federal research support is only forthcoming after an inventive conception has occurred. In such cases the grant or contract support is awarded for the express purpose of reducing the invention to practice. Further, as is clear from Randall's Nov. 7, 83 letter (enclosed) the purposes for which the government would likely exercise its retained license on the conceived but not yet practicable invention can often be fairly precisely defined at the time the research grant or contract is awarded. What I would like to suggest is that provisions be incorporated into your current bill - or a future ammendment - whereby the organization carrying out the research could obtain from the awarding government agency at the time of the award a brief statement describing the extent to which the government would exercise its retained license under current law. An example of such a statement is paragraph 3 of Randall's letter. Provision should then be made whereby the government could not subsequently expand to any significant extent the exercise of its retained royalty-free license. In my case this would provide assurance to future investors that the government would not at some future time expand the use of its license to cover procurement for Medicare, Medicaid, and a possible National Health Service, should such a program be instituted. Without such an assurance raising the necessary $100 million or more expected to be required for testing, regulatory approval, construction of production facilities, and initial marketing may be difficult or impossible.

A potential problem with the above approach is that it may not be possible to adequately define subject inventions at the time the grant or contract is awarded (some inventions are conceived during the course of a funded research project). A second approach which would circumvent this limitation would be to incorporate a buy-back provision whereby the inventing organization would have an option for some period of time (ten years would be ideal) of buying back the government's retained license. I believe a fair buy-back price would be five times the total amount of federal funds involved in the project wherein the invention was conceived and/or reduced to practice. This five-fold buy-back figure reflects the fact that the early stages of a research project present the highest risk and so the taxpayer is justified in a significant return on those high-risk seed funds. The five-fold buy-back figure also serves as a strong incentive to the inventing organization to use its federal support with the utmost frugality since any waste can ultimately be very costly to the organization responsible for such waste. An additional merit in this buy-back provision is that it serves to adjust the government's rights to the proportion of a research and development project for which the government actually provided funds. In contrast, at present the government retains exactly the same rights in a $100 million development project irrespective of whether it provides support amounting to a few thousand dollars or amounting to several million dollars. I feel such a situation is very unfair. My proposed buy-back provision would introduce a proportionality between the level of federal funding and the "market value" of the retained government

license. Furthermore, such a buy-back option would provide future investors an assured market exclusivity on the invention at a defined cost. Finally, the taxpayers' interest would be well served by the 500% return on their grant or contract support.

I trust you find one or the other of these alternatives to the current unrestricted government license to have merit. I'd appreciate your views on this matter and information on any actions you take along these lines.

Sincerely,

James Summerton, Ph.D.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Productivity, Technology and Innovation
Washington, D.C. 20230
(202) 377-8102

27 APR 1984

Dr. James Summerton
Anti-Gene Development Group
990 S.E. Marion
Corvallis, Oregon 97333

Dear Dr. Summerton:

Thank you for the copy of your letter to Senator Dole regarding your concerns with section 202(c)(4) of Public Law 96-517 concerning royalty free licenses to the Government on inventions generated under contracts or grants to small businesses or universities.

Your letter states your concerns very clearly and makes a good case for removing any unnecessary uncertainities that might discourage commecialization of these discoveries. Indeed, this is the goal of the current law which is expanded to cover all research performers under S. 2171. Section 202 (e)(1) of S. 2171 (p.10-11) gives the agencies the ability to specifically limit their rights in cases such yours where special circumstances might frustrate commercialization. This provision is extended to small businesses and universities in Section 217 (g) of the legislation.

Problems such as the one you are encountering could be addressed in the legislative history of the current legislation where the Judiciary Committee could make clear that Government licenses are intended for agency purposes only and not for programs such as Medicare and Medicaid. You might also request that Senator Dole's staff place your letter in the hearing record as the basis for the legislative history in this area.

I am enclosing a copy of the legislation with the section marked that could address your concerns. If I can be of any further assistance please give me a call.

Sincerely,

Joseph P. Allen
Policy Liaison

Attachment

BRISTOL-MYERS COMPANY
345 PARK AVENUE
NEW YORK, NEW YORK 10154

WILLIAM R. MILLER
PRESIDENT
PHARMACEUTICAL AND
NUTRITIONAL GROUP

April 16, 1984

The Honorable Charles McC. Mathias, Jr.,
Chairman
The Honorable Robert Dole
Senate Judiciary Subcommittee on
Patents, Copyrights and Trademarks
Room SD-137
Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senators Mathias and Dole:

Bristol-Myers Company is pleased to submit this statement in support of S. 2171, the proposed "Uniform Patent Procedures Act of 1983," introduced by Senator Dole, with Senators Laxalt and DeConcini. We would like to compliment you and the other members of the Subcommittee for holding hearings on this important legislation. Government patent policy and procedure is crucial to America's economic future and technological competitiveness. S. 2171 would help to reduce uncertainties and financial disincentives that now hinder private sector research and development involving inventions that have received some government funding in the research stage. By codifying current administrative policy designed to encourage commercialization of all government-supported inventions, and by unifying and simplifying agency procedures applicable to these inventions, this legislation would stimulate private sector investment. This would greatly benefit the public, since it would maximize the full development and use of inventions arising from federally-supported projects.

Bristol-Myers is a research-intensive company in the pharmaceutical industry that is also recognized as a leader in the nutritional, health care, and consumer products industries. It is an American company with worldwide sales of nearly $4 billion in 1983 and with approximately 21,000 employees in the United States. Bristol-Myers' commitment to future growth is demonstrated by the 15 percent increase in 1983 over the previous year in research and development spending. Pharmaceutical research represented 11 percent of pharmaceutical sales in 1983, compared to 9.8 percent in 1982.

A significant portion of Bristol-Myers' pharmaceutical business involves the research, development, and sale of anti-cancer drugs. Many of these drugs, including those which have been most successful in treating cancer patients, received some government funding during their initial research stage. Consequently, these drugs, like many other important inventions, have been subject to

government patent and licensing policies. Government patent and licensing policies have not always provided the certainty and incentives necessary to fully develop the potential of federally-funded inventions. However, recently Congress and the Executive Branch moved to remedy this problem. In 1980 Congress passed the University and Small Business Patent Procedure Act, also known as the "Bayh-Dole" Act, 35 U.S.C. §§ 200-211. The Bayh-Dole Act allows universities and small businesses to hold title to government-sponsored inventions, authorizes exclusive licensing arrangements, and removes many disincentives to collaborative efforts among government, universities and industry. Last year President Reagan extended the beneficial principles of the Bayh-Dole Act beyond universities and small businesses in his Memorandum and Statement of Government Patent Policy, dated February 18, 1983.

We support S. 2171 as another important step in the right direction. S. 2171 would codify the government patent policy announced in the President's February 1983 statement. Among other things it would eliminate inconsistencies caused by a large number of different statutes remaining on the books and help to coordinate the practices of different agencies. This legislation would also clarify existing law and remove any lingering doubt that, subject to certain safeguards, title and exclusive licensing rights are normally available regardless of an organization's size or tax status.

As is the case under current policy, for example, exclusive licensing would be appropriate at least in the period prior to commercial sale of the invention and for a reasonable time thereafter so long as adequate steps are being taken toward commercialization of an invention. Longer-term initial periods of exclusivity and extensions of exclusivity after commercial sale are also permissible, indeed, favored, in cases involving difficulties in developing a particular invention or a need to encourage research into new uses or improvements of an invention.

There are several other specific points Bristol-Myers would like to raise with respect to S. 2171.

-Section 3(c)(8) of S. 2171 (p. 20) eliminates the so-called 5-year "cap" on exclusive licensing arrangements involving large firms contained in the Bayh-Dole Act. We applaud this provision because a 5-year period of exclusivity often provides insufficient incentives, especially for the development of drugs by the pharmaceutical industry. The obvious intention of Section 3(c)(8) is to allow exclusive licenses of at least the time period authorized under present law. We believe it should be made clear that by eliminating the 5-year cap, Congress does not intend to grant federal agencies discretion to limit licensing arrangements to shorter periods of exclusivity.

-Similarly, in striking the Bayh-Dole cap, Section 3(c)(8) (p. 20) also eliminates language that authorized an extension of exclusivity beyond the cap as an offset for regulatory delay. We believe it is important that this change not be interpreted as eliminating the presumption contained in present law that the period of exclusivity should be extended to account for time spent obtaining pre-market clearances from the government.

-Section 3(a) would establish 35 U.S.C. §215(a)(2) (p. 6). This provision does not, we believe, provide a preference

for United States industry comparable to that contained in the Bayh-Dole Act, 35 U.S.C. § 204. Section 204 of the Bayh-Dole Act contains a preference applicable to licensing of privately-owned inventions that have received federal funding. In contrast, § 215(a)(2) would create a preference in the licensing of federally-owned inventions. We believe sound policy dictates that inventions that received taxpayers funds should, where possible, remain in the U.S. S. 2171 should therefore contain preferences for U.S. industry applicable to federally-funded as well as federally-owned inventions.

It is critical that the government do a better job of encouraging research and development efforts by private industry in order to afford the public the full benefit of inventions, including additional innovations on partially developed discoveries. Fewer than 4 percent of the government's 28,000 patents have ever been licensed. This figure compares unfavorably with a 33 percent licensing rate for university-developed inventions.

No company is likely to spend millions of dollars on research to develop new and supplemental uses of drugs, or any other type of invention for that matter, without the prospect of a reasonable return on its investment. This is a fundamental business principle applicable to the pharmaceutical industry as well as other industries. Clearly, the public benefits when the federal government encourages investment in the full development of breakthrough products by creating the necessary financial incentive afforded by private ownership of title and exclusive patent rights.

This principle is illustrated by the history of Bristol-Myers' product Platinol®, which has proven to be one of the most significant anti-cancer drugs brought to the market in the last two decades. Initially discovered at Michigan State University through research partially funded by the NCI, the successful expansion of Platinol's availability for approved use by cancer patients is, we believe, one of the triumphs of the government's search for better cancer therapies. In 1977 Bristol-Myers won an exclusive license to develop Platinol on the basis of its experience with six other anti-cancer drugs. Since being granted its license, Bristol-Myers has worked to develop Platinol to its maximum potential. By the end of 1982, Bristol-Myers had spent over $12 million on Platinol research, and had obtained government approval for Platinol use in the treatment of testicular, ovarian, and some bladder cancers. During the summer of 1982, Bristol-Myers requested an extension to enable it to perform research and development on several promising new uses. The Department of Health and Human Services had never before granted such an extension. In late 1983, the Department approved an extension of Bristol-Myers' exclusive license through 1988 because it found that the extension was in the best interest of public health. As a result of this license extension, Bristol-Myers will reduce Platinol's price by 30 percent over the remaining life of the exclusive license, and made a major research commitment in excess of $30 million to study the potential of this remarkably effective drug for the treatment of a wide range of other cancers. If Bristol-Myers' research succeeds, Platinol could be approved to treat approximately one-half of the cancer patients who die each year in this country.

Government-funded inventions like Platinol constitute valuable resources. With appropriate incentives, many of these inventions will be further developed commercially by the private sector. Industry, not government, has the means and experience to

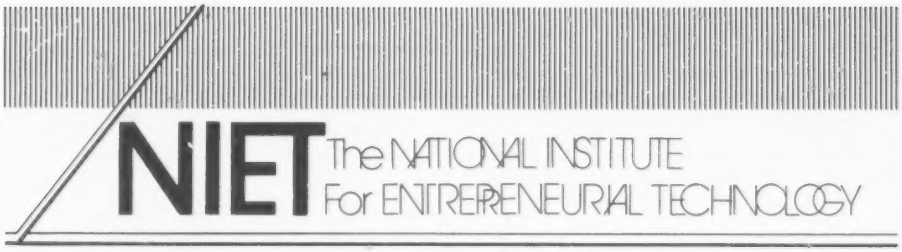
make this happen. The new products and processes will directly benefit the public, improve the productivity of the U.S. economy, create new jobs, and strengthen the position of the U.S. in world trade. These benefits, and the tax revenues generated by expanded business activity completely outweigh justifications for policies that turn government-funded inventions into non-productive assets. S. 2171 is a significant step in the right direction because it would help create an atmosphere in which industry will have the necessary incentives to make the financial investment that moves new ideas into the marketplace.

Bristol-Myers Company thanks the Subcommittee for this opportunity to comment on S. 2171. We would, of course, be happy to assist the Subcommittee further in its efforts.

Sincerely,

WILLIAM R. MILLER

ADDITIONAL STATEMENTS



Philip Speser, J.D., Ph.D.
Executive Director

STATEMENT OF THE NATIONAL INSTITUTE FOR ENTREPRENEURIAL TECHNOLOGY

on

S. 2172, THE UNIFORM PATENT PROCEDURES ACT OF 1983

While no doubt well intentioned and addressing an important problem. S. 2171, the Uniform Patent Procedures Act of 1983 is not likely to accomplish its purposes. Accordingly, we urge the Committee to careful consider alternatives before proceeding with this legislation.

The Federal Government currently provides a variety of incentives to firms seeking to conduct R&D with commercial potential. These incentives range from direct funding to licensing priviledges, to transfer of title to patent rights in inventions developed with Federal assistance.

There is little doubt that transfer of patent rights is vital for small firms. Because of their limited resources, most small firms have only a limited portfolio of inventions to market. They commonly can conduct only one or two R&D projects at a time. Moving the results of these projects into practical applications is often crucial for the economic viability of the company. Accordingly, a small firm which has developed a commercially viable invention with the aid of government fund has an exceptionally strong incentive to further develop and market that invention. It cannot afford the luxury of picking and choosing between inventions.

The situation is different in a major corporation. Large companies have a broad diversified portfolio of inventions. Any single invention is not the lynch pin of the company's economic viability. The issue for them is not <u>how</u> to market a particular invention, but <u>whether</u> to market the invention in the first place. Anyone familiar with the operations of major Federal R&D prime contractors has heard "war" stories about the difficulty of getting a large bureaucratic organization to commit the funds necessary to commercialize an invention.

If large corporations are already unable to commercialize their entire existing portfolio of inventions, what impact will S. 2171 have? As, in general, they already can obtain rights to inventions developed with Federal funds, it is highly unlikely that this legislation will have any effect on their behavior. The problem is not in obtaining rights -- the problem is in the lack of procedures for moving inventions to the marketplace.

In all probability, its major impact will be to discourage small companies from commercializing ideas developed with Federal funds. The reason for this conclusion is simple. A small company will have to be able to bear the costs of licensing the invention from the major corporation. These costs are a heavier burden for small firms with their limited cash flow than for larger companies. Further, employees of large corporations who may have worked to develop the invention will be discouraged from forming new firms to commercialize it, as they will have a harder time obtaining the rights so crucial to business success.

A far better approach would be to design Federal R&D programs in a manner which encourages government R&D contractors to commercialize the results of Federally-funded work. The Small Business Innovation Research programs provide one model of such a program. Other models should also be explored. For example, all R&D proposals could require a section describing what, if any, procedures exist to identify and exploit commercially viable inventions which might result in the course of the work. Procedures to inform other potential developers of inventions not of interest to the performer of the R&D might also be requested. Only those proposers who provided acceptable procedures and demonstrated their implementation would be allowed to request a no-cost transfer of patent rights should an invention result.

Uniformity is fine if it will accomplish substantive goals. However, in this instance, uniformity in the treatment of patent rights in inventions developed with Federal funds could well result with patents wasting away in corporate filing cabinets rather than in Federal filing cabinets. Accordingly we urge you to explore alternative approaches before proceeding with this legislation.

****

The National Institute for Entrepreneurial Technology is a pro bono publicum group whose members consist of small high-technology companies and entrepeneurial researchers. The Institute actively promotes the infrastructure entrepreneurial researchers require to develop socially responsible science and technology.

**STATEMENT ON BEHALF OF THE
PATENT, TRADEMARK AND COPYRIGHT LAW SECTION
BAR ASSOCIATION OF THE DISTRICT OF COLUMBIA**

ON

**S. 2171 TO AMEND TITLE 35, UNITED STATES CODE,
FOR THE PURPOSE OF CREATING A UNIFORM
POLICY AND PROCEDURE CONCERNING PATENT RIGHTS
ASSISTANCE AND FOR OTHER PURPOSES**

The Patent, Trademark and Copyright Law Section of the Bar Association of the District of Columbia is a non-porfit membership organization of over 250 attorneys interested in all aspects of intellectual property law, including patents and related anti-trust and unfair competition concepts. Section membership is not restricted to any segment of the profession, and its members and their clients thus represent widely divergent interests and views. Section members, who include attorneys in private practice as well as those employed by corporations and those in government, regularly represent patentees and accused infringers and are thus concerned both with enforcement of patents and with challenges to patents. This Statement is made on behalf of the Patent, Trademark and Copyright Law Section.

The Patent, Trademark and Copyright Law Section appreciates having the opportunity to present its views on S.2171.

We applaud the interest in and this effort toward improving the patent law of the United States. The patent law is a vital part of the stimulus to economic growth of the country. Many of the provisions of S.2171 are intended to improve this important law by unifying Government patent policy regarding patent rights stemming from inventions made with Federal assistance. In particular, the provisions of S.2171 would attempt to codify the statement made by President Reagan in his Government Patent Policy memorandum, dated February 18, 1984. The President's statement, in effect, provides that the policies of the various agencies toward all R&D contractors shall be the same or substantially the same as that applied to small business or nonprofit organizations under Chapter 38 of Title 35 of the United States Code (Public Law 96-517).

However, we believe that S.2171 does not meet the President's policy statement because of the significant disparity that exists between the provisions of Section 3(a) of the bill as applied to contractors classified as other than small business firms or

nonprofit organizations (non-small business contractor) and Section 3(c)(5) as applied to contractors who are classified as small business firms or nonprofit organizations (small business contractor).

INCONSISTENCY IN INVENTION REPORTING REQUIREMENTS

Under Section 3(a) of S.2171, Title 35 of the United States Code would be modified by adding new Chapter 19. Section 215(c)(1) of Chapter 19 would require the non-small business contractor to "disclose each subject invention within a reasonable time after it is made . . . ." As set forth in Section 3(c)(5) of S.2171, Chapter 38 of Title 35 would be amended to reflect that, under Section 202(c)(1), the small business contractor would be required to "disclose each subject invention to the Federal agency within a reasonable time after it becomes known to contractor personnel responsible for the administration of patent matters, ..." (It is noted that Chapter 38 of Title 35 would be redesignated as Chapter 18 under Section 2(a) of the bill. This chapter will be referred to hereinafter as Chapter 18.)

As defined, "subject invention" means any invention of a contractor conceived or first actually reduced to practice in the performance of work under a contract, as set forth in proposed Chapter 19, or under a funding agreement, as set forth in Chapter 18 of Title 35.

Therefore, the starting point for a "reasonable time" reporting window for a non-small business contractor begins when the subject invention is conceived or first actually reduced to practice under the contract while the window doesn't begin for a small business contractor until the subject invention becomes known to the contractor's patent-matters administrator.

As a practical matter, an inventor would probably continue development activity for some time after the subject invention has been conceived or first reduced to practice under the contract. In the case of the small business inventor, the inventor could delay the reporting of the invention to the patent-matters administrator until some time later. The administrator would have a reasonable time thereafter within which to report the invention to the Federal agency. This luxury would not be available to the non-small business contractor. It becomes apparent that the disparity between Section 215(c)(1) of proposed Chapter 19 and amended Section 202(c)(1) of Chapter 18 as set forth in S.2171 is certainly not in keeping with the President's policy statement of the "same or substantially the same" policies for all R&D contractors.

We therefore recommend that Section 215(c)(1) of proposed Chapter 19 be amended to be consistent with amended Section 202(c)(1) of Chapter 18, that is that both sections establish that the starting point for the "reasonable time" reporting window begin when the subject invention becomes known to the contractor's patent-matters administrator.

INCONSISTENCY IN TITLE-RETENTION ELECTION REQUIREMENTS

Under Section 215(c)(2)(A) of proposed Chapter 19, the non-small business contractor would be required to "make a written election, as to retention of title to the subject invention within a reasonable time after disclosure" of the subject invention to the agency as required under Section 215(c)(1). Amended Section 202(c)(2)of Chapter 18 would provide that the small business contractors "make a written election within two years after disclosure to the Federal agency (or such additional time as may be approved by the Federal agency) whether the contractor will retain title to a subject invention . . . ."

Again, disparity exists between corresponding time-period provisions relating to non-small business contractors and small business contractors which is contrary to the President's policy statement. The small business contractor is given a considerable well-defined period of two years, which may be extended, while the non-small business contractor is left with an undefined "reasonable time," within which to make election to retain title to subject invention.

We recommend that Section 215(c)(2)(A) of proposed Chapter 19 be revised to be consistent with the provisions of amended Section 202(c)(2) of Chapter 18, that is that both sections require written election to retain title within two years after disclosure of the invention to the Federal agency.

INCONSISTENCY IN PATENT APPLICATION FILING REQUIREMENTS

Section 215(c)(2)(C) of proposed Chapter 19 states that a non-small business "contractor electing to retain title to a subject invention will file patent applications within reasonable times . . . ." Amended Section 202(c)(3) of Chapter 18 states that a small business "contractor electing rights in a subject invention agrees to file a patent application prior to any statutory bar date that may occur under "Title 35 . . . The differences in the content of these two sections permits the small business contractor to file at the last possible time under the law, if at all, while the non-small business contractor must file within "reasonable times."

To avoid this inconsistency and to provide an equitable policy for all R&D contractors, we recommend that Section 202(c)(3) of Chapter 18 not be amended. This would result in consistency between this section and Section 215(c)(2)(C) of proposed Chapter 19 by providing that patent applications be filed within reasonable times.

SUMMARY

The compounding effect of all of the above-noted amended subsections of Section 202(c) of Chapter 18, as provided in S.2171, could permit a small business contractor to wait several years from the time the subject invention is conceived or first reduced to practice under the contract until a patent application is filed. It is even possible that the small business contractor could avoid having to file a patent application while still retaining title to the subject invention assuming that there were no impending statutory bars which would force the contractor to file or lose the opportunity to seek patent protection. In contradistinction, the non-small business contractor must act within serially arranged periods, described as "reasonable time" periods, in disclosing the subject invention, acting to retain title and filing an application for patent notwithstanding the absence of impending statutory bars. This clearly is contrary to the President's policy statement.

While we believe most of the objectives of S.2171 meet the standards set forth in the President's Government patent policy statement, we urge that our recommendations be considered and adopted to insure that, with respect to all R&D contractors, the policies regarding rights in inventions will be the same or substantially the same. We believe that this would be an equitable blend for all R&D contractors, for the Government and for the public in general.

Thank you for the opportunity to present our views.

○